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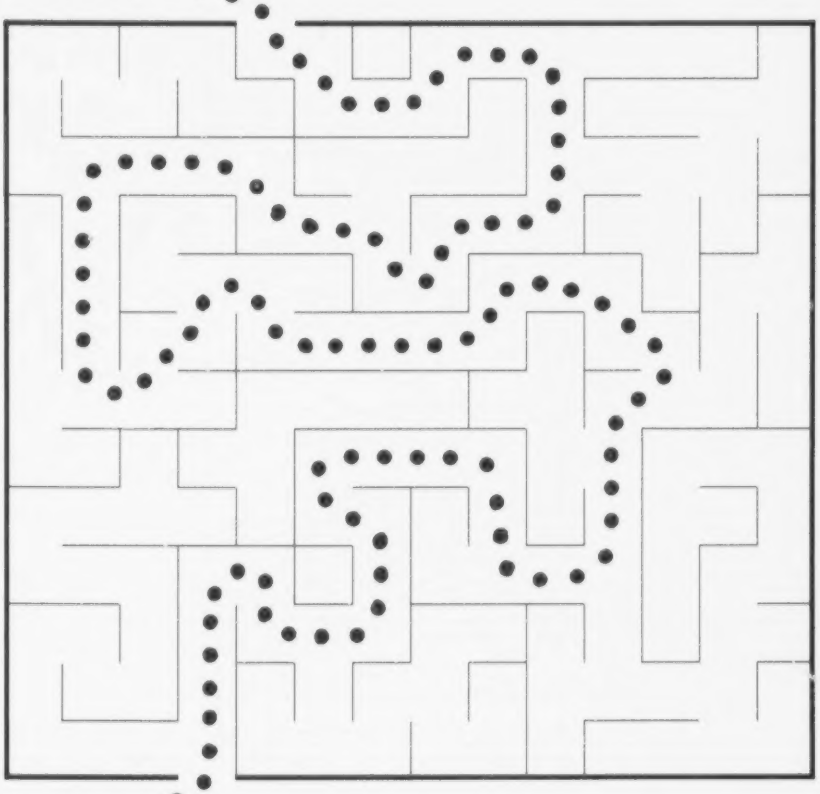
NORTHEAST
MIDWEST
INSTITUTE
THE CENTER FOR REGIONAL POLICY

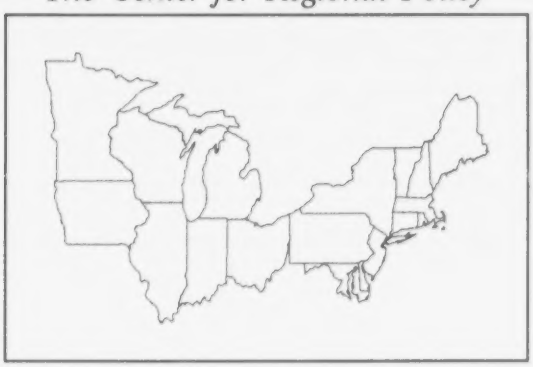
Making Sense of Federal Dollars



A Guide to Understanding Allocation Formulas

Northeast-Midwest Institute

The Center for Regional Policy



The Northeast-Midwest Institute, the Center for Regional Policy, is a nonprofit research and public education organization dedicated to the long-term economic vitality of the northeastern and midwestern states. It conducts research, develops public policies, provides technical assistance, sponsors regional conferences, and distributes publications.

The Institute is unique among Washington policy centers because of its close working relationship with the Northeast-Midwest Congressional and Senate Coalitions. Founded in 1976, the Congressional Coalition, co-chaired by Reps. Howard Wolpe (D-MI) and Dean Gallo (R-NJ), is a bipartisan group of nearly 200 representatives who recognize the common problems facing their states. The Northeast-Midwest Senate Coalition, formed in 1978 and co-chaired by Sens. Jim Jeffords (R-VT) and Daniel Patrick Moynihan (D-NY), has 36 members. Together the Coalitions seek to inform members of Congress about the impact of federal legislation and build consensus on issues of regional importance.

The Institute sponsors the Northeast-Midwest Leadership Council, a distinguished panel advising members of Congress on issues affecting the region's future. Composed of corporate, academic, and labor leaders, the Council presents the private-sector viewpoint on how public policies should be shaped to create jobs and expand business.

States served by the Institute and Coalitions are: Connecticut, Delaware, Illinois, Indiana, Iowa, Maine, Maryland, Massachusetts, Michigan, Minnesota, New Hampshire, New Jersey, New York, Ohio, Pennsylvania, Rhode Island, Vermont, and Wisconsin.

Making Sense of Federal Dollars

A Guide to Understanding Allocation Formulas

PAULA DUGGAN

NORTHEAST MIDWEST INSTITUTE
THE CENTER FOR REGIONAL POLICY

1992

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1. Introduction

"How much money will my state receive?" Elected officials and policy analysts naturally ask this question whenever Congress debates a new federal grant program or proposes to change an existing one. They have good reason for asking: federal grants to states and localities are a critical component of the public-sector enterprise in the United States.

The Impetus for This Guidebook

Throughout its history, the Northeast-Midwest Institute has endeavored to apprise the region's representatives, senators, and state and local officials of trends in the flow of federal funds to their jurisdictions. Each year the organization produces tables on state allocations as part of its annual summary of presidential budgets. From time to time it also publishes large-scale analytical studies documenting regional inequities in the distribution of federal funds. Through these means, the Institute seeks to develop in the region's policymakers and policy researchers a deeper appreciation of the cumulative effect of federal spending policies and to spur them to greater assertiveness on behalf of the region's interests.

Despite this work, federal allocation formulas remain an arcane and esoteric subject for most audiences. Officials often are knowledgeable about the legislative provisions governing the distribution of funds under one program or another. They often can cite exactly how much money their states or localities received for particular programs in a given year. Seldom are they aware, however, of the full complexity of the process by which provisions couched in legislative language are translated into dollar amounts for their jurisdictions. As a result, they are at a disadvantage when judging whether a particular formula is favorable to their interests or when trying to alter the distribution of federal funds to their greater benefit.

The purpose of this guidebook is to give readers some insight into the murky world of federal allocation formulas--to map the twists and turns in this labyrinth, to point out the potholes and stumbling blocks, and to suggest some routes through the maze. The goal is to strengthen the capacity of the region's federal, state, and local policymakers and analysts to probe the implications of various formulas and thereby to develop options and alternatives that will better serve the Northeast and Midwest.

Intended Audience

Members of Congress and their staffs, policymakers in states and localities, and state and local policy analysts have a direct role and, perhaps, the greatest interest in this subject. The guidebook is written primarily for them, but also for anyone else who wants to explore how federal allocation formulas work and who is in a position to influence their design. The text uses terms such as *policymakers*, *staffers*, and *analysts* interchangeably to mean all persons who track federal programs with an eye to maximizing their jurisdiction's share of federal funds.

Purposes

A thorough study of this guidebook will benefit anyone who is trying to devise formulas for newly proposed programs, revise formulas in existing programs, analyze alternative formula options, or defend formulas favorable to the region. The discussion argues that the fundamental analytical process underlying each of these purposes is the same. In each case, the policymaker or analyst must go beyond consideration of the everyday language used in legislative draftsmanship to get to the ultimate determinant of the distribution of funds: the raw data used to run the formula.

Strategies for Readers

This guidebook is written for both the novice and the seasoned professional and can be read on two levels. For the novice, it offers definitions of terms, descriptions of mathematical operations, and discussions of data characteristics generally. For this reader, the book begins with an explanation of why federal programs contain allocation formulas in the first place. Basic as this question may seem, it is one that Institute staff sometimes must address in the course of discussing particular formulas with congressional aides. Besides providing an answer for that question, this book can help the novice by serving as a handy reference to the exotic phrases and jargon-filled language common to discussions about formulas.

For the veteran of formula wars, the same information offers something more. It presents a logic for thinking through the design of a federal program from the relationship between policy and implementation, to the strengths and weaknesses of various methods for targeting funds, to the considerations that arise in choosing among alternative data sets. For this reader, the presentation of the rationale for formulas leads to a comparison of this method of targeting with another method--eligibility criteria--and to a listing of a host of allocation formula ingredients, such as setasides and hold harmlesses, that can change the distribution of funds. Thus, the seasoned pro can use this book not as a reference but as a menu of policy options.

The exposition of the logic of formulas serves as background for the tables in the appendix. Displayed here are sets of data commonly used in federal allocation formulas, accompanied by discussions of the advantages and disadvantages of each set from a regional perspective. The data are presented with this *caution: users should not rely on these tables to figure out the allocation for a particular jurisdiction under a particular formula*. Some data sets are updated frequently and formulas often call for more specialized subsets of data than the numbers shown here. Instead, readers should use these tables to get a sense of the *general* slant of these data and an appreciation of what questions they should ask about the data actually used in particular formulas.

The tables underline the thesis of this guidebook: only by looking behind the legislative language of formulas to the raw data used in them will Northeast-Midwest policymakers be prepared to defend and promote formulas that further the interests of their region and restore regional balance to the flow of federal funds.

Formulas, those seemingly rational calculations that determine funding amounts for each jurisdiction with an aura of mathematical impartiality, are actually highly sophisticated statements of both federal policy and political alignments. The development or revision of a formula is a highly politicized process. Influencing that process demands more than political cunning, however. It also calls for an understanding of the connections between policy and implementation and for an appreciation of some of the technicalities of data. In recent years, for example, Congress has seen spirited debates in which some members have advocated distributing the funds in one program or another on the basis of population, while others have countered with arguments favoring other bases for allocations. To take an intelligent position in these debates, the policymaker must know the underlying pattern of numbers. This guidebook will help to fill that need.

2. The Stakes in the Formula Game

In 1990, the federal government distributed $134.457 billion, or approximately 16 percent of the federal budget, to states and localities in the form of grants-in-aid. Although large, this spending item represents a smaller percentage of the federal budget today than it did in the 1960s and 1970s. Several factors account for this decline. Large chunks of the federal budget are already "spoken for;" mandatory spending for items such as interest on the national debt and benefit entitlements has increased not only in real terms but also as a proportion of federal spending. The room for discretionary spending has narrowed correspondingly.

At the same time, the federal budget deficit has forced Washington policymakers to adopt a succession of spending-reduction schemes. Congress has cut funding for many programs, forcing program administrators in states and localities to make do with level-funding or small adjustments for inflation. The resulting crunch in program funds now is aggravated by state budget woes, caused by the combination of recession and fallout from federal taxation policies of recent years.

The result of these conditions is an intensified scramble for the small pots of federal discretionary funds that remain. That scramble translates into disputes in Congress and among the states over the formulas by which federal program funds are allocated to states and localities.

The Regional Imbalance

Previous Northeast-Midwest Institute publications, especially *The Flow of Federal Funds 1981-1988: A $359 Billion Imbalance*, have documented that the region pays more in federal taxes than it receives in federal spending. If, during the eight years covered by that study, the Northeast-Midwest region had received a percentage of total federal spending equal to its share of the nation's tax burden, 46.9 percent, it would have received an additional $359 billion from the federal coffers. Because of the direction of priorities in the federal system, the region has been subject to a considerable outflow of funds.

In fiscal 1990, federal expenditures in the states totaled $953.07 billion. The Northeast-Midwest region received 41.3 percent of this amount. Had the region received the same portion of federal spending as it contributed in tax revenues that year, 47.4 percent, it would have gained an additional $58.6 billion. If it had simply received the same percentage as its population, 42.4 percent, its return would have increased by $10.7 billion.

Historically the states of the Northeast and Midwest have done well in the grants-in-aid category of federal spending, while lagging well behind other regions in the other three categories of federal investment--procurement, wages and salaries, and direct payments to individuals. Even so, the region's receipts of grants to state and local governments fell 7 percent in real dollars (adjusted for inflation) from fiscal 1981 to fiscal 1990.

A Regional Strategy

A good part of this imbalance in federal investment stems from the location of most military installations in the South and West and the pattern of procurement that has grown up around them. Little can be done to shift the direction of federal expenditures in this domain, especially in the face of cutbacks in military spending and the promise of further base closures. Instead, the Northeast-Midwest Institute has suggested that regional policymakers try to redress regional inequities in the distribution of federal funds by playing their strong suit--finding ways to increase the region's share of grants-in-aid funds. Given the proportionate decline in the region's population, glaringly documented in the 1990 census results, lawmakers from the Northeast and the Midwest will have to be extraordinarily diligent just to stay even in the scramble for federal allocations.

While the inequity in the overall pattern of federal spending is apparent, the fight to change this pattern must be waged the same way Congress makes policy, i.e., on a program-by-program basis. Regional analysts must examine each program that comes up for consideration in Congress to see how it worsens or rectifies the regional imbalance. They must track legislation carefully as it moves from subcommittee consideration to final enactment to determine the effect of successive versions on the region. They also must be on the lookout for opportunities to make changes favorable to the region's interests.

These imperatives mean that staff working for members of Congress from the Northeast and Midwest and analysts who follow federal legislation from offices in state capitals must become more adept at analyzing federal allocation formulas. In addition, they must have some yardsticks for judging the equity of proposed distributions. When evaluating the grants-in-aid programs overall, staff at the Northeast-Midwest Institute generally use the region's share of population or the region's share of federal taxes as benchmarks against which to measure the impact of the allocation process. The case-by-case approach that must be taken to change the present pattern, however, demands sophisticated case-by-case arguments. Each program probably has its own appropriate yardstick, based on the program's purpose and the population it is designed to help. For that reason, this guidebook begins with the basics--an explanation of the relationship between program purposes and the distribution of funds.

3. Allocation Formulas: The Slip between Cup and Lip

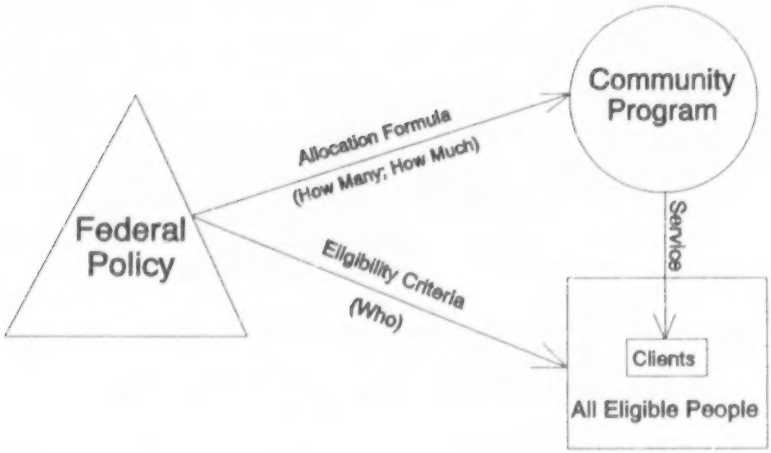
During the 1980s, domestic assistance programs accounted for approximately 16 percent of federal spending. Through these programs, the federal government seeks to meet a variety of needs ranging from highway construction to housing to education to income for the impoverished. The government distributes the overwhelming bulk of funds for these purposes by using mathematical formulas. In some programs, the ultimate beneficiary is the public at large, as in the case of library services or environmental cleanup; in others, specific individuals are the beneficiaries. This chapter lays out the logic underlying the distribution of funds in both types of programs. To avoid wordiness and repetition, however, the discussion speaks in terms of programs that deliver services to individuals.

Programs: Purposes, Eligibility, and Formulas

The first step in understanding the distribution of federal funds is to make a distinction between program purposes, eligibility criteria, and allocation formulas. Many federal programs provide funds to recipient jurisdictions at other levels of government--states, counties, or other local configurations. They in turn provide services to individuals. Such programs include the Job Training Partnership Act (JTPA), which sends money to states and localities to train economically disadvantaged persons for jobs, and Chapter I of the Hawkins-Stafford Elementary and Secondary Improvement Act, which distributes funds so that communities can give disadvantaged children a boost in their educational development. The *purpose* of these and other federal programs is to meet a compelling *need*.

Programs like these contain both *eligibility criteria* and *allocation formulas*. Both are ways of delineating need. *Eligibility criteria define who* is in need and therefore eligible to receive the service; *allocation formulas estimate how many* people are in need in each community. In this manner, formulas determine how much money a state or community will receive to provide the service. Defining who and estimating how many/how much are different processes.

In a perfect world, a program's eligibility criteria and allocation formula would be identical. Ideally, Congress would decide which group of people needs the service and would lay out the terms for determining if a particular individual is a member of that group--the eligibility criteria. Then, it would allocate adequate funds to each community in proportion to its share of the national total of those people eligible to receive the service.



Targeting

This ideal model does not occur in the real world because, all too frequently, no one knows exactly where the eligible people are located or how many live in each recipient jurisdiction. Congress tends to write eligibility criteria

Example: JTPA's Eligibility

The Job Training Partnership Act provides an example of the concepts discussed above. The eligibility criteria specify that a person must be "economically disadvantaged" in order to participate in training programs supported by JTPA funds. In common parlance, the term *economically disadvantaged* means "poor." But the law defines it very specifically.

The term "economically disadvantaged" means an individual who (A) receives, or is member of a family which receives, cash welfare payments under a Federal, State, or local welfare program; (B) has, or is a member of a family which has, received a total family income for the six-month period prior to application for the program involved (exclusive of unemployment compensation, child support payments, and welfare payments) which, in relation to family size, was not in excess of the higher of (i) the poverty level determined in accordance with criteria established by the Director of the Office of Management and Budget, or (ii) 70 percent of the lower living standard income level; (C) is receiving food stamps pursuant to the Food Stamp Act of 1977; (D) is a foster child on behalf of whom State or local government payments are made; or (E) in cases permitted by regulations of the Secretary, is an adult handicapped individual whose own income meets the requirements of clause (A) or (B), but who is a member of a family whose income does not meet such requirements.

No data exist on the population thus defined for the nation as a whole, never mind data on the distribution of this population among states or local jurisdictions. No data exist on most of the subparts of this definition: none for local welfare recipients under (A), none for those who would be poor except for the income exclusions in (B), none on foster children under (D), and none on handicapped individuals under (E).

narrowly to identify a program's intended beneficiaries as precisely as possible. This precision is necessary because, in most cases, program funds are limited; Congress appropriates a certain amount and seeks to ensure that those persons "most in need" are most likely to receive the service. But, herein lies a paradox: *the more narrowly and specifically Congress defines the eligibility criteria, the greater the likelihood that no numbers will exist at the national level on the numbers of people who meet the definition in each locality.* This situation compounds the difficulty of constructing an appropriate allocation formula.

In JTPA and in many other federal programs, Congress must rely on *proxies* for the number of eligible people in each community. *An allocation formula attempts to approximate the need in each recipient jurisdiction by using available data that have a bearing on the issue.* The goal is to align the allocation formula as nearly as possible with the eligibility criteria so the funds go where the intended beneficiaries are located.

Targeting is the term used to describe *mechanisms for limiting eligibility and concentrating funds.* Both eligibility criteria and allocation formulas are spoken of as "targeted." Many disputes over formulas revolve around questions of whether funds are properly "targeted on need."

Eligibility Criteria *Versus* Allocation Formulas

This distinction between eligibility criteria--who--and the program's allocation formula--how many--is critically important. The two may, in fact, use very different words and sound quite different. The key point is whether the numbers referenced by the words in the allocation formula are *distributed* in a similar manner to the numbers of eligible people. In most cases, the two distributions complement one another in zeroing in on the same ultimate need. In this sense, both eligibility criteria and allocation formulas are proxies for need. The difference is that *in designing eligibility criteria Congress can be very detailed and precise; in designing allocation formulas Congress is limited to using data available nationally to approximate needs locally.*

For this reason, the nation's statistical system is crucial to effective "carry-through" of the policy intentions stated in legislative language. If no adequate data set exists on needs at the level of the recipient jurisdictions (state or local), funds will be misdirected and national policy frustrated in implementation. This is the essential point missed by those who argue that the federal government's statistical needs are limited solely to national data. On the contrary, unless the federal government has data on a wide variety of conditions in states and localities, its own domestic policies, particularly those carried out through the grant-in-aid system, will be misguided.

Policy Option: To Target or Not

Most allocation formulas attempt to zero in on need in the same manner that eligibility criteria try to pinpoint who should receive services. But, depending on the program, strict targeting of funds may be neither feasible nor desirable. Lack of suitable data for use in the formula may make precise targeting of funds impossible, even when policymakers desire that objective. Moreover, programs need political support more than they need mathematical precision. Lawmakers sometimes find it strategically important to spread funds among political subdivisions rather than to concentrate them. A widespread distribution of funds may help to build a farflung constituency for a program, ensure sufficient popularity for it to survive, and even generate support for increased funding in later budget cycles.

If every community has some share of the need addressed by a particular program, and if available funds can deal with only a fraction of the need in any case, Congress often opts to spread the funds around. In doing so it does not have to abandon completely the notion of targeting. *Eligibility criteria can carry the burden of targeting and the allocation formula can assume the task of generating political support.* Awareness of the distinction between eligibility criteria and allocation formulas can help the savvy lawmaker find the means for optimizing both targeting and the continued political viability of the program.

In some cases, policy as well as politics argues for spreading money more widely than strict targeting might dictate. While many federal programs try to meet compelling needs directly by providing services to eligible people, programs also may pursue goals indirectly by providing new models that attempt to change the way traditional service delivery systems operate. For example, in the field of education, where the federal share of funding amounts to only about 7 percent of the total, it is probably more appropriate for the federal government to craft policies that move the mountain of resources at other levels of government than to try to solve a problem all by itself.

When supporters contend that a federal program is inadequately funded, they are sometimes correct. Other times, the accusation may miss the program's intention to point the way for others to follow, not to fund the whole solution. Like their constituents, members of Congress also may lose sight of the "teaching" role of legislation: faced with a humanly compelling problem, lawmakers frequently draft bills to address the need directly when modifying or changing systems already in place might be a more effective strategy. In addition, withholding some money from direct services to invest in research, evaluation, and the development of data systems may lead to improved services for a greater number of people in the long run. When assessing a particular allocation formula, analysts need to consider whether these kinds of purposes, rather than the precise targeting of dollars to needs, underlie the formula.

Targeting Without Allocation Formulas

Some programs do not rely on allocation formulas but target solely by means of eligibility criteria. Forms of this kind of targeting include individual entitlements, triggered entitlements, and reimbursable entitlements.

Individual Entitlements

In an *entitlement* program, every person who meets the definition of the eligibility criteria has a *right to receive the service*. In many cases, the service is financial assistance. In the field of entitlement programs, two that provide income support to persons who qualify are among the best known--Aid to Families with Dependent Children (AFDC) and Unemployment Insurance (UI).

In creating an entitlement program, Congress, in effect, commits the federal government to provide the program benefit to eligible individuals regardless of how many people meet the eligibility criteria. In reality, policymakers control the size of the program by narrowing or widening the eligibility criteria. An estimate of the number of people who meet various criteria translates into an estimate of the costs associated with various definitions of eligibility. Thus, policymakers can choose a definition of eligibility that falls within the parameters of available funds. For this reason, the phrase "open-ended entitlements" is an inaccurate and misleading tag. In an entitlement, the definition of eligibility controls the cost. Indeed, redefinitions and restrictions of eligibility are constant features in both AFDC and UI.

Policy Option: The Pros and Cons of Individual Entitlements

The entitlement approach requires no allocation formula. The benefit can be provided even in the absence of data at the national level on the distribution of eligible people among local communities, a distinct advantage given the slippage that can occur when available data sets approximate need only inadequately. The disadvantage of entitlements is that they do tend to be expensive; while costs can be limited by the definition of eligibility, the more Congress splits hairs in defining these criteria, the greater the paperwork, administrative overhead, and "red tape" associated with the program. Narrow definitions also increase perceived inequities as only a hair's breadth separates the eligible from the ineligible. Narrow entitlements tend to give rise to demands that they be "broadened," i.e., that their eligibility criteria be written less restrictively. It is that pressure, not the fact of entitlement itself, that adds to their expense.

Triggered Entitlements

In addition to using eligibility criteria, some programs limit entitlements by employing a program *trigger*, which *limits the number of individuals receiving the service or benefit to those who live in certain jurisdictions*. This process is used in the permanent Extended Benefits (EB) program for unemployment insurance. The program becomes activated (the term used is *triggers on*) when a state's unemployment level reaches a certain point. Individuals in that state who are still unemployed at the end of their term of entitlement to regular unemployment benefits (who are spoken of as having "exhausted" their UI) become entitled to payments under the EB program. Essentially, the entitlement for individuals operates only *within* the entitlement for jurisdictions, a sort of two-tiered definition of eligibility. (In contrast, in the temporary program for extension of unemployment benefits enacted in November 1991, Congress used state unemployment rates not to activate the program but to determine the number of weeks of benefits, 13 or 20, that UI exhaustees could receive.)

The rationale for a triggered program is the belief that a certain critical mass of a problem changes its nature. In the EB example, the problem changes from the one addressed by UI, individual joblessness, to one in which the sheer volume of unemployment in an area increases exponentially the difficulty of any one person's finding a job. Triggered entitlements might be appropriate, for instance, for dealing with the social pathologies that arise amid concentrations of poverty or for addressing environmental pollution problems.

Reimbursable Entitlements

Some entitlement programs are crafted to operate as reimbursements to the states, which actually provide the benefits. In these cases, the tactic of targeting an entitlement through eligibility often is complemented by employing reimbursement rates that vary by state. These rates are set by complex, data-driven formulas that aim to encourage states to provide the benefits while allowing for differences in the financial resources available in each state to pay for them. Reimbursement rates for Medicaid, for example, currently range from the statutory floor of 50 percent in 12 states (Alaska, California, Colorado, Connecticut, District of Columbia, Illinois, Maryland, Massachusetts, Nevada, New Hampshire, New Jersey, and New York) to a high of 79.8 percent in Mississippi. The AFDC program also operates in this manner and uses the Medicaid reimbursement rate, as do several other programs.

Although Medicaid and AFDC are entitlement programs, they contain targeting and controlling mechanisms that parallel the generic model of federal formula grant programs described thus far. Like the non-entitlement JTPA program, they contain *eligibility criteria* that define who *and a means of allocating federal funds that attempts to approximate need*. Instead of supplying funds to recipient jurisdictions through an allocation formula applied to a fixed appropriation, however, these entitlement programs use variable rates to reimburse jurisdictions for their expenditures on behalf of a defined clientele. How these reimbursement rates are established and whether they accurately measure the states' ability to pay is every bit as controversial an issue as whether allocation

formulas are "targeted on need." (Problems in the Medicaid/AFDC reimbursement rate are explored further in Chapter 6.)

Policymaking Review

For the policymaker or analyst concerned with the state or regional distribution of federal funds, entitlements--whether individual, triggered, or reimbursable--are just as much as matter of concern as programs funded by allocation formulas. Indeed, some of the largest federal grant-in-aid programs, such as Aid to Families with Dependent Children and Medicaid, are entitlement programs. They highlight the point that, in a particular program, two ways may exist to change the regional distribution of federal funds: through the allocation formula and through the eligibility criteria.

The foregoing discussion raises some questions for those trying to craft a formula for a new program or attempting to understand the distribution of funds under an existing formula.

Is the purpose of the program to meet a need specific to certain individuals? Is the purpose to provide a new model of how existing service-delivery systems might conduct their business?
Is the purpose to raise an issue to the attention of states and localities?

Does a wide or a concentrated distribution of funds best accomplish the program's purpose?
Does the program need to build a broad geographical base of support?
Is support more likely to be generated if the program is seen as finely targeted or if the program proves its worth in many communities?
Does the program need to conserve limited funds?

Should targeting be accomplished by eligibility criteria or allocation formulas, or both?
What effect would changes in one *or* the other have on the distribution of funds?

Should the program be an entitlement?
Does the entitlement need to be limited in some way?
What effects do different definitions of eligibility have on the size of the program and the distribution of its benefits?

Is a two-step (triggered) system of eligibility appropriate for the program? Does the scope of the problem change its nature?
Does the problem demand attention in some types of communities more than in others?
How do alternative triggers alter the regional distribution of benefits?

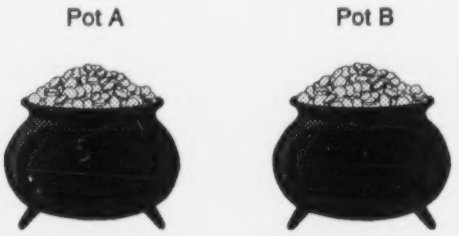
Should funds be distributed by allocation formula or should other levels of government be reimbursed for providing benefits?
Should all benefit providers be reimbursed at a flat rate or should additional targeting policies be built into reimbursement rates?
What measures of need would be appropriate to include in reimbursement rates?
What is the regional impact of alternative measures of need?

4. Formulas: Factors, Weights, and Shares

As the previous chapter indicated, allocation formulas measure need by proxy. Often no single set of data exactly encompasses the complex of needs that the federal program seeks to address. Few programs focus on needs as straightforward as, for example, the Older Americans Act (OAA), which distributes funds to states on the basis of each state's share of the over-60 population, or the Social Services Block Grant (SSBG), which distributes funds solely on the basis of population. These two programs have simple formulas, each consisting of only one *factor*--population of a certain age for OAA or total population for SSBG.

For most programs, Congress constructs formulas from various factors that, in combination, appear to offer a better approximation of need than any single factor would. Each factor is then assigned a *weight*, which *specifies what percentage of the total funds is to be distributed according to each factor.* From a policy perspective, the weights are like mathematical statements of the purported contribution of each factor to the overall need.

A formula with several weighted factors is akin to several "pots" of money, each representing one factor.



The pots may be of the same or different sizes. For example, if a formula weights each factor at 50 percent, then Pot A and Pot B would be the same size. Alternatively, a formula that weights Factor A at 75 percent and Factor B at 25 percent would have a Pot A three times larger than its Pot B. The total money for any one recipient jurisdiction is the sum of what it receives from each pot.

Negotiations over a new formula or proposals to alter an existing formula may involve changes in the factors *or* in their weights. An additional factor may be included or an existing factor deleted, or the relative importance (the weights) of different factors in the formula may be altered.

Example: JTPA Formula Factors

The Job Training Partnership Act is not an entitlement program. Although the exact number of persons who meet the eligibility criteria is not known, estimates at the national level indicate that the program's limited appropriations are sufficient to serve only 5 percent of the population defined as eligible. JTPA's purpose likewise is somewhat unclear: to address needs directly or to stimulate states, employers, and educators to change their methods of dealing with job training for the unskilled and school-to-work transition for poor youth. Local program administrators appear to operate JTPA as a direct service program, while federal policymakers tend to see the program as a vehicle for conveying policy messages to other audiences.

Funds for JTPA are allocated to states and communities by formula. Because there are no data at the national level on the distribution of JTPA-eligible persons among states and localities, the allocation formula uses proxy measures to target funds. The formula includes three factors, weighted as follows:

33 1/3 percent on the basis of the relative number of unemployed individuals residing in areas of substantial unemployment in each State as compared to the total number of such unemployed individuals in all such areas of substantial unemployment;

33 1/3 percent on the basis of the relative excess number of unemployed individuals who reside in each State as compared to the total excess number of unemployed individuals in all the States;

33 1/3 percent on the basis of the relative number of economically disadvantaged individuals within the State compared to the total number of economically disadvantaged individuals in all the States.

The act also defines each of the key terms in these factors: "areas of substantial unemployment" are those with an average rate of unemployment of at least 6.5 percent for the most recent 12 months; "excess number of unemployed" is the number in excess of 4.5 percent of the civilian labor force; and "economically disadvantaged" is given the same meaning as in clause (B) of the definition used in the eligibility criteria (quoted in the previous chapter).

In 1989 and 1990, authorizing Committees in the House and Senate devoted considerable time to developing alternatives to this formula. They explored options that included: eliminating the first factor; doubling the weight on the third factor; redefining the third factor; adding a new factor; breaking out the adult and youth components of the factors; and leaving the formula alone. (Alternative versions of JTPA amendments died in conference at the end of the 101st Congress; JTPA is on the agenda for the 102nd Congress.)

The concern that prompted these proposals for change was a perception that JTPA funds were not properly targeted to the areas where eligible people lived, or, in the common phraseology, "not sufficiently targeted on need." Few critics contended that ineligible people were participating in training; with funds so limited, each jurisdiction had money to serve no more than a fraction of the eligible, never mind the ineligible. Rather, lawmakers sensed an imbalance between eligibles and funds from one jurisdiction to another. They speculated that some cities might receive funds to serve larger portions of the JTPA-eligible population than other comparable cities. From such concerns, the search for better proxies, a formula that would more nearly match funds with needs, was launched.

The possibility of "slippage" between policy and its execution, of imprecise targeting and a lack of "fit" between funds and needs, is probably inevitable as long as measurements of one set of phenomena are used as stand-ins for measurements of another set. The availability of data determines, to a large extent, how much slippage will exist. In the interest of proper implementation of its policy decisions, Congress should be intensely concerned about the kinds of data collected by the nation's statistical system. The reliance of policy on data often is not apparent, however, until policymakers begin to explore intensively the inner workings of formulas. As a result, among the many issues confronting Congress, data policy itself rarely achieves priority.

Converting Dollars into Shares

The factors in the JTPA formula quoted above speak of the "relative number" of this or that population subgroup "compared to the total number." This phraseology is common legislative language used in many federal allocation formulas. It means "share." *Each recipient jurisdiction's share of funds in a federal program is calculated on the basis of its share of the factors specified in the formula.*

When congressional staffers and policy analysts in the states are confronted by a legislative proposal that will distribute program funds by formula, they ask immediately what amount their states or districts will receive. This is probably the wrong question to ask. Congressional proposals frequently come with reams of attachments showing how many dollars each state will receive in the current fiscal year and in subsequent budget cycles. Such information tells very little. What does it mean if Wyoming will receive $4,135,628 and Pennsylvania will receive $13,476,878? The lawmaker needs some standard by which to compare and judge these numbers.

If the proposal is a modification of an existing program, the same sheaves of printout often show how much each state received in prior years. The new numbers may look good in comparison. But if, as is frequently the case, the new proposal assumes a funding increase (for inflation, if nothing else), the new dollar amounts are bound to look better than the old ones. Does that mean that the new proposal represents an improvement for a particular state or local area? To answer that question, the analyst must *convert dollar amounts into shares of the national total,* as follows.

Share = Area Allocation of Dollars/National Total of Dollars

The result of this calculation will show what percentage of the total funds each recipient jurisdiction can expect to receive. Manipulating the dollar amounts this way makes possible a comparison of shares in one year to shares in another. For example, a particular jurisdiction's share in the first year of a new formula may be 0.0138 or 1.38 percent of the national total. Its share in the prior year was perhaps 0.0145, and its share in future years may decline to

0.0133, 0.0127, and 0.0125. Clearly, this jurisdiction would be losing ground under the new formula. This situation may occur *even if* the amount of dollars it receives grows in future years. Dollar amounts must be converted into shares before this fact becomes obvious.

Converting Shares into Dollars

Converting dollars into shares is not only essential for an overview of the impact of a formula at the grossest level; it also is a prerequisite for understanding which factors in the formula cause the impact. The following hypothetical example shows the amounts that three jurisdictions may expect to receive from a program budgeted at $1 billion:

	Fiscal 1991 Allocation
Recipient 1	$15,725,000
Recipient 2	$23,950,000
Recipient 3	$23,900,000
etc.	etc.

Understanding these total dollar amounts requires an examination of the distribution of the component factors. Much more helpful to the analyst or the lawmaker than a printout of recipients' dollar amounts is a printout of recipients' share of various formula factors. As an example, assume that the $1 billion program posited above has three factors in its formula. The first three lines of a printout of recipients' shares of the formula factors might read as shown.

	Factor A	**Factor B**	**Factor C**
Recipient 1	0.0145	0.0203	0.0078
Recipient 2	0.0232	0.0303	0.0120
Recipient 3	0.0612	0.0123	0.0098
etc.	etc.	etc.	etc.

These numbers shows that Factor A benefits Recipient 3; Factor B is best for Recipients 1 and 2; Factor C favors Recipient 2 over the other two recipients, but is not its best factor.

Thinking of each of the formula's factors as a separate pot of funds, each recipient jurisdiction would get a share of Pot A equal to its share of Factor A, a share of Pot B equal to its share of Factor B, and so on. Suppose Factor A is weighted at 25 percent, Factor B at 50 percent, and Factor C at 25 percent. Again, the total appropriation for this program is $1 billion.

To obtain a recipient jurisdiction's allocation, the dollars in each pot are multiplied by the jurisdiction's share of each factor.

Allocation for

Recipient 1 = $250m X 0.0145 + $500m X 0.0203 + $250m X 0.0078

Recipient 2 = $250m X 0.0232 + $500m X 0.0303 + $250m X 0.0120

Recipient 3 = $250m X 0.0612 + $500m X 0.0123 + $250m X 0.0098

The dollar amounts thus obtained are those already displayed.

Recipient 1	$15,725,000
Recipient 2	$23,950,000
Recipient 3	$23,900,000

The next chapter discusses various ways in which this simplistic example is modified in reality. For the moment the example highlights the importance of going behind the readily obtainable estimations of the dollar amounts of a particular allocation to see how the various factors interact to produce them. The interests of the various recipients in the different factors then show up clearly: Factor A for Recipient 3 and Factor B for Recipients 1 and 2. In a debate over this formula, Recipient 3 might well argue for an increase in the weight on Factor A and a reduction in the weight on Factor B, which the other two recipients would likely oppose.

Defining the Factors and Running the Formula

Legislation usually contains a section entitled "Allocation Formula" or something similar that lists the factors in the formula and the weights assigned to them. A quick perusal may mislead analysts into thinking they understand the formula. Often, however, the legislation will contain other sections that further define and describe these factors. In the JTPA language quoted previously, for example, each factor in the formula is further defined in other sections of the law.

A close reading of JTPA reveals that excess unemployment means the number of unemployed persons over 4.5 percent of the civilian labor force. Unemployment in areas of substantial unemployment (ASU) means the number of unemployed persons in areas having over 6.5 percent unemployment. If a recipient jurisdiction has an unemployment rate below 4.5 percent, it receives no funds from this pot of money; if it does not contain an ASU, it receives no funds from the ASU pot. In short, for these two factors the formula operates not on the basis of shares, but of shares *above* some minimum. JTPA's excess unemployment and unemployment in areas of substantial unemployment are examples of *threshold factors*.

Threshold factors serve to target funds to an even greater degree. Many communities may be eliminated from participation in the distribution of funds by the imposition of a threshold. Thresholds in formulas are similar to triggers for entitlements, considered in the previous chapter, and to community eligibility criteria, considered in the next. For analysts looking at a particular allocation formula, threshold factors draw attention to the importance of reading *each* word in the formula to understand completely how the factors are defined.

Knowledge of these additional definitions is not enough, however. Analysts must know exactly what data are used to "run" the formula, to translate the legislative words into numbers. Where do these data come from? What time period do they represent? Are various options available, different data sets that could represent the same phenomenon that the factor cites? Questions such as these require some further consideration of the characteristics of data. Before turning to this discussion, however, the following chapter describes the many ways in which the design of federal grant-in-aid programs departs from the general model presented thus far.

Example: CDBG and the Best of Both Worlds

When Congress consolidated several existing programs to create the Community Development Block Grant (CDBG) in 1974, it established an allocation formula to distribute funds previously awarded on a competitive basis. From the outset, the allocation formula was one of the most contentious aspects of the new program. The factors of population (weighted at 25 percent), poverty (weighted at 50 percent), and overcrowding in housing (weighted at 25 percent) were seen as benefiting growing cities and those with relatively low costs of living at the expense of other areas. This result, however, was not realized immediately--older, declining cities were shielded temporarily from funding reductions by a guarantee that 1975-to-1977 funds would be based on amounts received under the former competitive procedures.

Controversy over CDBG's formula did not end with final enactment of the program. A 1976 Department of Housing and Urban Development study indicated that cities losing population had far higher levels of need and fiscal strain than fast-growing communities and that the CDBG formula largely ignored the nonpoverty dimensions of community distress. Research by the Brookings Institution determined that, after the guarantee period expired, the formula would cause funding reductions for larger cities, especially those with aging housing stock in the Northeast and Great Lakes states. Members of Congress from these regions became alarmed by the potential shift of funds to the sunbelt.

To deal with this problem, Congress constructed a "dual formula" system for CDBG. It retained the original formula, but added a second one with the factors of poverty (weighted at 30 percent), population lag (weighted at 20 percent), and age of housing (weighted at 50 percent). The second and third factors serve as proxies for general economic and fiscal decline, housing and neighborhood problems, and high maintenance and replacement costs for aging public works--physical as opposed to personal dimensions of community need. Under the dual formula system, CDBG allocations are computed twice and jurisdictions receive the larger amount.

The CDBG dual formula says, in essence, that there are alternative, and probably equally valid, ways of measuring need, particularly when the needs themselves are complex and varied. The lesson for regional policymakers and analysts from CDBG is just that--to look for alternatives for existing formulas, factors, and data.

Policymaking Review

The congressional staffer or state analyst studying a particular formula needs to consider the following points.

What is the effect of each factor in the formula?
Which factors are beneficial to the interests of my state or local area?
Which factors are disadvantageous?
Which areas do those factors benefit?

What effect does the elimination of a factor have on my state or local area?

What is the effect of changing the weights on the factors?

Could new factors be added or existing factors redefined to make the formula more beneficial from my perspective?

What data are used to run the formula?
Could other data, more advantageous to my state or local area, be used to run the factors in the formula?

5. Variations on the Generic Model of Allocation Formulas

The discussion so far has presented a simplified model of how allocations formulas work. Few formulas, however, are simple. They often contain a host of "ifs, ands, and buts" that modify the ultimate distribution of funds. Lawmakers have at their disposal a variety of mechanisms to deal with unusual circumstances and irregularities that pure mathematics may not accommodate. These mechanisms also may be used to favor or protect some jurisdictions at the expense of others. This chapter explores some of the common "twists" in allocation formulas and, in doing so, presents a menu of options that policymakers seeking regional equity may use in the allocation game.

Defining the Recipient Jurisdiction

Previous chapters have skirted a term that needs elaboration--"*recipient jurisdiction*," the unit of government receiving the funds. Some federal programs designate the state level as the recipient of funds; others send funds to the county or city level. Still others formulate their own unique configuration for providing services. JTPA, for example, establishes Service Delivery Areas, constructs of units of general local government--cities, counties, and localities--intended to conform to labor market areas. The map of federal grants is made even more complex by the fact that many programs use a combination of recipient jurisdictions. The Community Development Block Grant (CDBG) program, for example, distributes part of its money to large cities and urban counties directly, while another part goes to states for distribution to small cities.

The following sections discuss some of the options or variants of recipient jurisdictions used in federal programs.

State and Substate

Federal programs that seek to help individuals must deliver services where people live, i.e., locally. However, legislation need not specify how the funds are to be distributed locally. Some federal programs use an allocation formula to distribute funds to the state level, leaving to the state the decision of whether and how to make further distributions of the funds. In some cases, the state may have in place a delivery system in the form of local offices of a state agency. The Employment Service is an example of this type of program. The federal government allocates funds to the states, which use their own planning and budgeting systems to determine the amount of funds for each local ES office. In other cases, federal law allocates money to the states, which, in turn, use a

Policy Option: The Politics and Numbers of Designating Recipient Jurisdictions

The choice of recipient level is a matter of both politics and numbers. The political dimension involves differing conceptions of the federal system and the role of the federal government. Some policymakers conceive of the federal system as a creation of the states and believe that the federal government's relationship is properly with the states, which, in turn, should deal with localities and individuals. This group tends to favor state government as the appropriate recipient of federal program funds. Other officials believe that the federal government has a direct relationship with the citizenry, regardless of the states in which people live. Furthermore, they point out that, as a practical matter, programs that provide services require a local delivery structure. This group tends to advocate local government as the proper recipient of funds from federal programs.

A theoretical advantage of distributions that go directly to localities is the elimination of an administrative layer between the federal government and the ultimate beneficiaries of the program, with the promise of conserving program funds for direct services. Such programs also generate their own administrative "overhead" at the federal and local levels, however, so that ultimately there may be no administrative savings. A potential drawback to the "local" approach is the difficulty of coordinating federal programs with similar programs operated by the state. Because state governments have an increasingly large role in the fields of education, training, social services, health, welfare, and economic development, the ability to coordinate locally based programs with state-based delivery systems is a major concern. For the same reason, small programs that aim to change traditional ways of doing business in larger service delivery systems often must focus on the state.

These political debates about the nature of federalism and the design of administrative systems often flounder, however, on the shoals of numbers. Often, the only data relating to a problem addressed by a federal program are state-level figures; in other cases, data may exist for local-level jurisdictions but those numbers may be inaccurate, out of date, or not available for the particular local configurations that the federal program envisions. For some programs, however, data are available at a variety of levels of disaggregation--state, county, city, and so on. In these instances, federal policymakers can designate recipient jurisdictions without having their choices constrained by data. Lawmakers concerned with regional equity in the distribution of federal funds should be aware of data options before choosing the level of recipient jurisdiction to write into law. If data appropriate for a particular formula *and* favorable to the region are available only at the state level, lawmakers will want to consider that fact in designating the recipient jurisdiction for funds.

bidding process whereby local and nonprofit agencies compete to offer the services under contract to the state. The Older Americans Act, where many services are delivered by nonprofit contractors, exemplifies this approach.

Other federal programs use a formula for state-level distributions and specify the factors that states must use in disbursing funds locally. Many education programs operate this way, directing states to distribute funds based on each local education agency's share of "educationally disadvantaged" youngsters. This approach circumvents the lack of an adequate national data set for this group by allowing states to use their own data.

Some programs specify an allocation formula for determining the amount of funds for each state and then apply the same formula for distributing the funds within each state. The federal agency administering the program supplies the state with computer runs or raw data for the substate allocations. This procedure is used in the Job Training Partnership Act. In distributing funds to the state level rather than allocating them directly to the local level, this approach gives the state a policymaking and oversight role, enabling it to coordinate the federal program with related state-based activities. At the same time, however, it retains for the federal government the ability to target funds to needs in local jurisdictions.

The Repooling Problem

A difficulty with these state-to-substate approaches is that targeting can be diluted as funds pass through the state level, not because of malicious intent but rather the inadequacy of data or problems in the logistics of computer runs. JTPA provides an example where this sometimes vague and elusive problem can be seen clearly in simple mathematical terms.

The previous chapter suggested that a three-factor formula such as the one used in JTPA can be seen as three separate pots of money, each distributed on one factor. While the three factors in JTPA have equal weights, the total funds that any one state receives may consist of more money from one pot than from another, depending on the state's share of the national total of each formula factor. Thus, in a hypothetical example, a state with a large share of the nation's unemployment may find that, of its total allocation for JTPA, 42 percent (say) of its funds may come from the excess unemployment pot and another 48 percent from the areas of substantial unemployment pot, with only 10 percent coming from the economically disadvantaged pot.

In JTPA's state-to-substate process, however, these funds are pooled at the state level and the same formula, involving the same three equally weighted factors, is applied again. In other words, the state allocation, which consisted of 42 percent, 48 percent, and 10 percent, is divided again into three equal pots. In this process, two of the local-level conditions that contributed to the state's total allocation are devalued and one condition is overvalued. The effect is to skew the federal targeting and, ultimately, to underfund some local areas and overfund others.

To avoid this problem, Congress can specify that the three factors be reweighted after the first-level allocation to size (weight) the pots according to the state's share of the national total of each factor. Using the numbers just given, the weights on the factors for the substate distribution would be 42 percent, 48 percent, and 10 percent, rather than 33.3 percent, 33.3 percent, and 33.3 percent.

The repooling issue underscores the point that the analyst must examine this state-to-substate stage of formula runs in order to understand fully the distribution of funds. In addition, Congress often includes provisions in law to deal with "special" cases that the purely mathematical operation of the formula might "shortchange." These provisions, such as small state minimums, setasides, and grandfathering, alter the distribution that might be expected to occur if the formula alone determined allocations for recipient jurisdictions.

Small State Minimums

The application of a formula often produces negligible dollar amounts for small states--those that are small either in population or in geographic area. While an allocation may fairly represent a state's incidence of the problem Congress seeks to address, the dollars may be too few to mount a viable program. Although it is impossible to specify a general rule for what constitutes a realistic minimum, every federal program entails administrative costs. When funds for administration are established as a percentage, the recipient jurisdiction's total allocation must be large enough to cover program administration *and* to deliver a credible amount of service. For this reason, federal allocation formulas often contain a provision for a *small state minimum, a guaranteed minimum share of funds*, usually stated as a percentage of the total national dollars. In JTPA, for example, each state is guaranteed no less than one-quarter of 1 percent, or 0.0025 of the funds. In the State Revolving Loan Program for Wastewater Treatment Construction, small states receive one-half of 1 percent, or 0.005 of the funds.

When the formula is run, small state minimums are figured in one of two ways. One method involves running the formula to determine which states do not achieve the minimum. These states are then brought up to that level by taking the total of funds for all other states, reducing it by the amount needed to bring the small states up to minimum, and then recalculating the allocations for the above-minimum states. The second method involves assignment of the minimum to all states, with the remainder allocated by formula. Both options reduce the amount of funds allocated by formula, although the second option takes a larger dip into the pot for formula distribution. In either case, large states receive slightly less funding than they would if the total appropriation was distributed strictly by formula.

Setasides for Certain Jurisdictions

Many federal programs that allocate funds by formula also contain *setasides, funds specially designated for specific jurisdictions*, such as territories like Guam and the Virgin Islands, Native American and Alaskan tribes, and so on.

Sometimes Puerto Rico also is treated this way, although more often it, like the District of Columbia, is treated as a state for federal allocation purposes.

Such special treatments result from data problems. Some types of data available for states are not produced for these other jurisdictions and groups; thus, they cannot be included in the regular formula allocation. Instead, funds are specially designated, or set aside, for their use. Setasides are stated either in dollar amounts or as a percentage of total funds; in either case, setasides are taken "off the top" of the program's funds. Like small state minimums, they lower the total amount available for distribution by formula.

Legislation may establish setasides for purposes other than providing funds for jurisdictions where the formula, for lack of data, will not work. Setasides may be established, for example, for research, demonstration, evaluation, and so on. Whatever their purpose, setasides at the federal level reduce the funds available for distribution by formula. Likewise, legislation may establish setasides at the state level. In a program structured with an allocation formula from the federal to the state level and from the state to the local level, state-level setasides reduce the amount passed down to localities.

Grandfathered Jurisdictions

When Congress reauthorizes a program or creates a new program to replace an older one, it may redesign the delivery system for the service. When such action changes the recipient jurisdictions, the statute may *grandfather or hold over some recipients* from a previous program design. For example, a program that allocated funds directly to the local level may be revised so that funds flow through the state first. In this case, existing configurations for service delivery may not fit within the new design for recipient jurisdictions and the flow of services to persons in need may be disrupted. In addition, powerful political forces may lobby to retain the old arrangements.

In these circumstances, Congress occasionally grandfathers some existing recipient jurisdictions into the new program. An example of grandfathered jurisdictions are the four rural concentrated employment programs (called rural CEPs) in JTPA, holdovers from an earlier law. Instances of grandfathering also are found in the Community Development Block Grant (CDBG) program. Here, so-called "entitlement cities" qualify to receive funds directly from the federal government on the basis of their population size; smaller communities compete for funds allocated to the state. In recent years, however, several cities that have fallen beneath the required population level have been allowed to continue in the direct federal-to-local relationship rather than being reclassified into the competitive, state-administered portion of the program.

Grandfathered jurisdictions may be funded by formula or by a dollar or percentage setaside. If they are funded by setaside, the amount will be taken off the top of the total funds available for distribution, reducing funds for jurisdictions funded by formula.

Allocations to the Local Level

Some federal formulas allocate funds directly to localities such as cities or counties. Programs that use the direct federal-to-local approach often must rely on data from the decennial census, with drawbacks discussed in the following chapter.

Direct federal-to-local distributions run the risk of dissipating funds by spreading them broadly in a great number of local jurisdictions. To reduce this effect, federal-to-local programs use eligibility mechanisms to limit the number of communities that receive aid.

Community Eligibility Criteria for Targeting

Eligibility criteria as they apply to individuals, with an example from JTPA, were described in Chapter 3. Many federal programs, particularly those that allocate money directly from the federal to the local level, use eligibility criteria to specify which types of *communities*, rather than persons, may participate in the program. The approach is useful when the problem needing redress is defined in terms of physical environment, such as deteriorated housing or pollution, rather than the needs of individuals. For example, federal law may specify that only communities with more than a certain number of inhabitants are eligible. In CDBG, as mentioned above, only cities with at least 50,000 residents or urban counties with at least 200,000 residents are "entitled" to receive grants directly from the federal government. In essence, these population criteria limit the number of local jurisdictions that are eligible to receive a share of funds.

In this case, *community eligibility criteria* act as a targeting mechanism. They are analogous to *triggers for entitlements* and to *thresholds for formula factors* in that all three have the effect of *eliminating some communities from participation in the receipt of funds*. For the policymaker trying to craft a new federal program, these three mechanisms provide targeting options that may be more or less appropriate, depending on the purpose of the program. All three also require that extensive local data be available at the national level to determine which communities are eligible and to run formulas.

Community Eligibility Criteria for Administrative Efficiency

In other cases, community eligibility criteria are intended *to achieve administrative efficiency* rather than to target funds by eliminating some areas from the program. By establishing a minimum population base for recipient jurisdictions, they force small, contiguous communities to merge for the purpose of establishing the eligibility of the larger entity to become a recipient jurisdiction. This process is the one by which many areas achieve designation as Service Delivery Areas (SDAs) for JTPA or as urban counties for CDBG. The purpose, and the effect in these cases, is to reduce the number of entities administering the program and ensure, to the extent possible, that entities will be large enough to receive sufficient funds through the allocation process to mount a viable program.

A variation on this theme occurs in the HOME Investment Partnership program. In this case, a local jurisdiction must qualify for at least $500,000 under the program's formula in order to receive funds directly from the federal government; otherwise, the community may apply to the state for a portion of the state's allotment of funds. In contrast to the yes/no laundry lists of criteria that most programs use to determine community eligibility, the use of a formula-driven funding threshold potentially allows for a more sophisticated consideration of the *interplay* of factors, especially if the formula is composed of multiple factors and weights. Under this scenario, for example, one community might qualify because it has a very high incidence of one factor in the formula, while another might qualify by having a mid-level incidence of several factors. The mathematical operations involved in a formula can allow for gradations in a way that a pass/fail checklist of criteria cannot.

In addition, the funding threshold approach to eligibility determination allows the structure of the delivery system, i.e. the number of grantees, to adjust automatically to the level of appropriations. If the total appropriation drops, for example, fewer communities would reach the $500,000 threshold. The approach thus precludes some of the problems of inadequate administrative funds, discussed below.

Responsiveness of a Formula

The goal of a formula is to direct funds to where the needs exist. Once a formula has been written into law, powerful political forces develop a vested interest in the distribution of funds, rendering very difficult any effort to change it. Therefore, in its initial design of a program, Congress often is concerned with whether the formula will be *responsive* to changes in the distribution of needs in the absence of further legislative action.

Federal legislation uses several mechanisms to smooth out fluctuations in funding under otherwise "responsive" formulas. These mechanisms have arisen partially from concern for administrative efficiency and partially from the process of political compromise by which "winner" and "loser" jurisdictions are satisfied and mollified over changes in the distribution of federal funds. Mechanisms for stabilizing formulas include the following examples.

Admin Minimums

Fluctuating allocations cause management problems when the funds for program administration, commonly called "admin" funds, are defined as a percentage of the recipient jurisdiction's allocation. As a hypothetical example, consider the situation of a local agency that receives $1 million one year and $2 million the next for a program with a 10 percent limit on admin costs. The agency will have $100,000 one year and $200,000 the next for staff salaries, office rental, and the other expenses that go into running a federal program. Suppose in the third year, the allocation falls. The agency's second year in this program will be devoted to staff hiring and training and the third year to layoffs and loss

Policy Option: The Pros and Cons of Responsiveness

The need to make a formula responsive depends upon the nature of the problem that Congress seeks to address. Is the problem fairly stable over time, or does it expand and contract rapidly and shift its location from one area to another? In short, does it fluctuate? If it does, are data available that capture that fluctuation and can those data be used to distribute funds by formula?

Take, for example, poverty. Some funds to alleviate the condition are provided by individual entitlement, which obviates the necessity of establishing an allocation formula. The funds simply follow the individual. Many efforts to relieve poverty conditions are funded by formula, however, using community-level data from the decennial census. This practice assumes, with substantial corroborating evidence, that the poverty population is fairly stable over time in its location. Yet, it probably also bulges in some places and contracts in others in ways that data collected in ten year intervals cannot properly mirror.

Unemployment presents a different picture, one with more rapid fluctuation. Data are available to measure changes in this condition monthly. Therefore, formulas that contain unemployment factors have the potential to make significant changes in the distribution of funds among recipient jurisdictions from one funding cycle to the next. Such a formula would be considered *responsive*.

In common parlance, responsiveness sounds good. Policymakers certainly want social programs to have this quality. When applied to formulas, however, the quality has some disadvantages as well. Dramatic swings in funding from one year to the next cause administrative problems that disrupt the efficient delivery of service. This problem occurs whether the fluctuation in funding causes a windfall or a severe cutback for a recipient jurisdiction. Administering a rapid program buildup is as difficult as scaling back radically on a program's operations.

of expertise. In both cases, delivery of services suffers. In addition, the program will be unable to attract and hold good personnel because of the uncertainty about the stability of employment.

One way that Congress can attempt to avoid this situation is to establish a *minimum allocation for program administration, a guaranteed amount of funds for each recipient jurisdiction to use for administration*. An admin minimum is analogous to a small state minimum allocation. Both ensure a base amount of funds for operating the program, the first by specifying a dollar amount for administration, the second by specifying a basic program allocation of which admin funds are a percentage.

Admin as a Separate Allocation

Another way to deal with the problem of ensuring sufficient admin funds within a program with a responsive formula is to fund admin separately. In this situation, the recipient jurisdiction receives two pots of funds--one for services by formula and a totally *separate pot for admin*. For example, in the Medicaid program, states are reimbursed for their payments for medical services according to one formula and are reimbursed for the administrative costs incurred in operating the payment system by a separate calculation. The extent to which the two can be separated probably depends on the nature of the program. Those with admin costs consisting mainly of the management of contracts and payments to vendors are different than those in which the admin cost category also covers some services, such as outreach activities, that must expand and contract with the allocation for services.

Hold Harmless Clauses

Fluctuations in allocations can be reduced by including "hold harmless" provisions in legislation. A *hold harmless* minimizes the "harm" done to jurisdictions that stand to lose funds under a formula by *guaranteeing that their allocation will not drop below a certain level*. A hold harmless may be expressed as a percentage that guarantees, for example, that no jurisdiction will receive less than 90 percent of its prior year's allocation. Alternatively, it may be expressed as a dollar amount stating, for example, that no jurisdiction will receive fewer dollars than it received in a specified year. The two are somewhat different. In the first case, the formula is run and jurisdictions that, by formula, would receive less than 90 percent are brought up to that level by reducing the amounts available for jurisdictions over the 90 percent level. (Such reductions are called "ratable reductions" in legislative parlance and the allocations are spoken of as being "ratably reduced.") In the case of a dollar amount hold harmless, every jurisdiction is assigned its guaranteed dollar amount, and then the remaining dollars are allocated by formula. In this case, the formula almost ceases to apply unless the appropriation is greater than it was in the reference year. In this sense, a hold harmless on the dollar amount in a specified year is somewhat analogous to the situation of applying a new formula to new funds, discussed below.

Another variation on this theme is the "rolling" hold harmless. In a *rolling hold harmless, a jurisdiction's funds for several prior years are averaged in calculating the hold harmless amount*. So, for example, a jurisdiction may be guaranteed 90 percent of its average funding for the three previous years. The situation is similar to income averaging on an individual tax return and, as in that situation, the purpose is to cushion the effect of wild fluctuations in funding.

New Formula Applied to "New" Dollars

Sometimes when Congress wants to change an existing formula to align it better with new conditions or with a new program design, it specifies that the new formula will apply only to *new dollars--additional funds appropriated above and beyond the amount appropriated for a particular year*. For example, Congress established the Low-Income Home Energy Assistance Program (LIHEAP) in the

late 1970s to target assistance to cold-weather regions hard hit by rapidly escalating prices for heating fuel. In the different petroleum-price climate of the 1980s, policymakers began to feel that the LIHEAP formula, which used the factor of heating degree days squared, tilted too much toward northern states. In response, they changed the formula to reflect heating and cooling costs of low-income households and specified that the new formula would apply to funds above the program's 1984 funding level.

Applying a new formula only to new dollars leaves undisturbed the existing constellation of political interests surrounding a particular program. At the same time, however, the strategy enables the proponents of change to make the case to the appropriating committees that funds should be increased so that the new "improved" formula can take effect. Thus, this ploy can be useful in a situation where funding has remained level or dropped because the appropriating committees perceive that the existing formula is unresponsive.

Stop Gain Provisions

As a complement to hold harmless clauses, some federal legislation also contains *stop gain provisions, percentage limits on how much a jurisdiction's allocation may be increased by the operation of a formula*. A stop gain provision may specify, for example, that no jurisdiction's allocation may be more than 120 or 130 percent of its allocation in the prior year. Like hold harmlesses, stop gain provisions make it possible for lawmakers to change existing formulas by cushioning the impact of the change on the distribution of dollars.

Minimum Return on Dollars Provisions

The effect of formulas also may be modified by *minimum return provisions, guarantees that recipient jurisdictions will receive a specified percentage of taxes collected*. Minimum return provisions are not found in programs paid for with general funds; they apply only to programs paid for with dedicated taxes held in trust funds. The preeminent example is the highway program, financed for the most part by the gasoline tax. In the past, each state received at least 80 percent of the amount it paid into the Highway Trust Fund; in the 102nd Congress, lawmakers raised this amount to 90 percent. Although several formulas are used for the various parts of the overall transportation legislation, these payback provisions substantially limit their impact.

Unlike other minimum guarantees, such as small state minimums or hold harmless provisions in which some states are brought up to the minimum level at the expense of other states, the guaranteed minimum payback of highway funds does not reduce the amounts allocated to states already slated to receive more than their minimum according to the formula. Instead, the formula is run, the amount necessary to ensure the minimum payback is calculated, and that amount is then added to the total. The highway program can do this because of surplus money in the trust fund.

Some lawmakers have suggested use of a minimum payback to supplement the allocation of funds for the administration of the Unemployment Insurance program and the Employment Service, both of which are paid for from UI trust funds. Although some states favor this approach, Congress has not adopted it.

Matching and Spending Federal Dollars

Congress frequently throws two other ingredients into the federal funding pot--matching requirements and reallocation provisions. Like the mechanisms discussed previously, these provisions limit the unfettered operation of a program's formula over the total range of its appropriation. These embellishments on the generic model of allocation formulas add further complexity to the analyst's task of understanding the patterns in funding for various jurisdictions.

Matching Requirements

Many federal programs contain *matching provisions, which require recipient jurisdictions to provide additional funds for the program equal to a specified percentage of the recipient's federal allocation*. A matching requirement may be explicit, with the law stating that the recipient jurisdiction "shall provide funds equal to [X] percent," or the requirement may be implicit, as when a law states that federal funds may be used to cover "up to 80 percent" or "up to 90 percent" of the cost of providing the service. Laws may require matches in cash, a so-called "hard match," or in kind (additional services, space in buildings, and so on), a so-called "soft match." Requirements for hard matches often specify that the matching funds must come from the recipient jurisdiction's own resources, rather than from other federal program funds. Whatever form the match takes, the requirements are intended to ensure the recipient jurisdiction's commitment to the program and vigilance in its financial management. They also are meant to increase the amount of services available to meet the need identified by the federal program.

Despite these good intentions, matching requirements often embody a paradox: an allocation formula is designed to give more money to the neediest jurisdictions, but a large federal grant requires a correspondingly large match that needy areas may have difficulty meeting. For example, when Congress first enacted the Dislocated Workers Program under Title III of JTPA, it required a 50 percent match for the federal funds. Lawmakers recognized, however, that many of the jurisdictions most adversely affected by dislocation were among the least able to come up with the necessary matching funds. Therefore, they crafted provisions to "soften" the match by reducing it 10 percent for each 1 percent that a jurisdiction's average unemployment rate exceeded the national average. They also allowed jurisdictions to count some UI benefits toward part of the match. In essence, the matching requirement came to resemble the variable reimbursement rates used in programs like Medicaid and AFDC. Like the mathematical operations by which those rates are calculated, the computation of "sliding scale" matching rates also should be examined for their regional impacts.

Eventually, the matching requirement for Title III was dropped altogether. The difficulties it engendered for hard-pressed jurisdictions highlight the fact that matching requirements can serve to undermine the whole logic of allocation formulas to align funds with needs.

Reallocation Provisions

Some federal programs contain *reallocation provisions* to *redistribute dollars that remain unspent after a certain amount of time*. The reasons for unspent dollars range from the failure of a jurisdiction to administer the program efficiently to an inability to raise matching funds. Sometimes, however, underspending happens because a jurisdiction simply does not need the money. Allocation formulas measure need by proxy; proxies may or may not reflect accurately the need that a particular program is designed to address. Thus, by rearranging the distribution of funds produced by an allocation formula, a reallocation can correct an inequitable alignment of funds with needs.

When a reallocation occurs, unspent funds are recaptured and redistributed to jurisdictions that have spent their allocations, usually using the same formula by which funds were originally allotted. Despite the imagery of the language, the process actually occurs on paper. Authority to draw down funds over some allowable "carryover" amount (an amount, stated as a percentage of the original allocation, that a jurisdiction retains a right to spend in the following year) is transferred from one jurisdiction to others. Analysts should be aware that, because of reallocations, federal agencies may issue revised information on the dollar amounts allotted to recipient jurisdictions in the third or fourth quarter of the year. The Department of Labor uses a reallocation process in the Dislocated Workers Program under JTPA, for example, which results in some infusions of funds late in the year for impacted areas.

Policymaking Review

The foregoing discussion should alert the analyst to the existence of a large number of variations on the generic model of allocation formulas. The divergence of a particular state or locality's allocation in any one program from the expected situation may be due to any one or a combination of these mechanisms; all of them alter the flow of funds from what they would be under the unfettered operation of the formula. These variations also offer options that the analyst or lawmaker can consider in trying to craft or redesign a formula.

Embellishments such as repooling or hold harmless clauses highlight the point that understanding a formula requires more than a cursory reading of the "allocation formula" section of a piece of legislation. They suggest that the analyst must dig deeply into the legislative language and ask questions also about the "nuts and bolts" process by which formulas are run.

What effect does the designation of recipient jurisdiction have on the distribution of funds?
Does a change of recipient jurisdiction from state to local or vice versa change the distribution?
How does the availability or nonavailability of data influence the choice of recipient jurisdiction?

Are there or should there be eligibility criteria for recipient jurisdictions? What effect do they have on the distribution of funds?
What are the effects of a change in the eligibility criteria versus a change in the allocation formula?

How much money is taken off the top of the appropriation to satisfy setasides, minimums, and hold harmlesses?
How would changes in these provisions alter the regional distribution of funds?

If a formula is unfavorable (or favorable) to a region, can mechanisms such as admin minimums, hold harmlesses, and stop gains be added to (or deleted from) the legislation to limit (enhance) the operation of a formula?

6. Some Considerations About Data

Correcting inequities in the regional distribution of federal funds may require changing the factors in a program's allocation formula or the weights assigned to the factors. It may necessitate adding or deleting minimums, set-asides, hold harmless/stop gain provisions, or other mechanisms that affect the amount of funds subject to the formula. However, lawmakers also affect the pattern of federal funding by specifying the data used in allocation formulas. Substituting one set of data for another may make as much, if not more, difference in the distribution of funds as the variations already described.

Allocation formulas depend on data. To understand completely how a particular formula operates, a policymaker or analyst must be intimately familiar with the data used in it. As a first step, one must understand the characteristics of data generally.

Characteristics of Data

Disaggregation

In the foregoing chapters, the term *data* has been treated gingerly; the discussion has not included the terms *national data* or *local data*. Instead, it has spoken of data *at the national level* on needs *at the local level* and has used other circumlocutions to suggest that allocation formulas require data sets that cover the whole nation *and* that consist of subnational (or recipient jurisdiction) numbers. There are no easy ways to talk about data, no quick labels, that capture precisely the issue here, which is the "level of disaggregation" contained in a set of data.

When witnesses testify before a congressional committee on the nation-wide incidence of problems such as illiteracy or homelessness or some other condition that Congress seeks to ameliorate, they often use national statistics for which no disaggregated numbers are available. Allocation formulas, however, require disaggregated data.

Much of the nation's data on social conditions comes from national surveys. Researchers conduct these surveys with a random sample of the nation's population and project the findings obtained from the sample to the nation as a whole. On the basis of such research, national experts are able to testify with very great accuracy that X percent of the nation's population suffers from Condition Y, for example. They have good "national data." But national data do not tell anything about the distribution of these people among subnational jurisdictions. If Congress wishes to allocate funds to localities to deal with Condition Y, this national-level data will not help.

To carry the example further, suppose that, in addition to national experts, local officials also testify before Congress on the extent of Condition Y in their communities, seeking a proportionate shares of funds to deal with the problem. On the basis of the data they present, it may appear that an allocation formula for dealing with Condition Y could be crafted in a very straightforward manner based on the incidence of Y. A host of questions arises, however. Do data on Y exist for all jurisdictions? If data on Y are available for all jurisdictions, has Y been defined consistently from one jurisdiction to another? Have data on Y been collected by the same methods and in the same time frames across all jurisdictions? Are data on Y reported to the national level, i.e., does some agency at the national level assemble, publish, and make these data available for Congress and federal agencies to use? If the answer to any of these questions is "no," then the data will not serve for an allocation formula.

An allocation formula requires that data be available at the national level for each recipient jurisdiction however defined--state, county, and so on. Very few data sets meet this basic requirement of allocation formulas, leaving lawmakers with few options when they try to devise new formulas. Part of the responsibility for this situation rests with the Office of Management and Budget (OMB), which has tended to view data collection solely in terms of reporting burdens and costs, overlooking the need for disaggregated data in the execution of federal policy. For example, OMB repeatedly has proposed the elimination of the Permanent Mass Layoffs and Plant Closures data program as a cost-saving measure, even though Congress has slated the data for use in allocating funds for the Dislocated Workers Program under Title III of JTPA. Part of the responsibility, however, rests with Congress itself, where statistical policy tends to slip to the bottom of the priority list until, in the course of trying to develop some new allocation formula, the scarcity of appropriate data becomes apparent.

Uniformity

Another important consideration about data is uniformity in collection methodologies and in definitions of terms. To give an extreme example of nonuniformity in both spheres, all school systems collect data on dropouts, but each defines the term and collects the data in time frames that meet its own management needs. As a result, data are not comparable from one jurisdiction to another and cannot be aggregated to state or national totals. When Congress wanted to target money to communities to deal with the dropout problem, it had to authorize creation of a new national data set in order to obtain, at some future time, the statistics it needs now.

Uniformity in data is a characteristic prized by statisticians. Uniformity, however, can hide important considerations that Congress may want to take into account in allocation formulas. For example, data on the number of persons whose incomes are below the poverty line are based on the concept of one national poverty standard. However, the cost of living differs from one region of the country to another, a fact that poverty figures overlook. A person whose

income is just above the poverty line in a fairly expensive cost-of-living state such as New York or California may actually be worse off financially than a person whose income is below the poverty line but who lives in a relatively inexpensive state such as Kansas or Mississippi. In recognition of this reality, the federal government publishes a range of income definitions that, in effect, adjust the poverty line to take into account family size and area cost-of-living. But no data exist on the number of people in each subnational jurisdiction whose incomes fall beneath these adjusted standards. Thus, poverty data--so uniform and neat--are actually quite flawed and may not serve federal policy purposes when they are used in allocation formulas.

Timeliness

Data for allocation formulas should be up-to-date. In fact, distributions of federal funds often rely on very old information. The premier example of the timeliness problem is data from the decennial census. Numbers from the census, especially housing and income data, are prominent parts of the formulas for programs such as the Job Training Partnership Act, Community Development Block Grant, and Social Service Block Grant, to name just a few. Census data are acknowledged, even by the Census Bureau, to be inaccurate (witness the recent debate about whether to make mathematical adjustments to the 1990 decennial census to include uncounted persons). They have the advantages, however, of being available in disaggregated form and uniform in their definitions of terms and collection methodologies. Census data also have a certain aura of legitimacy and officialness about them.

The major drawback to data from the decennial census is that they are collected only once every ten years. As a result, they are out of date for much of their life. Moves to inaugurate a mid-decade census to collect information every five years instead of every ten have floundered on the issue of cost. Data collection by census is very expensive and the costs are rising. The 1990 census, for example, cost $2.6 billion, twice as much as the 1980 Census. Indeed, all forms of data collected by so-called "intrusive" methods (such as telephone surveys or door-to-door canvassing) are becoming prohibitively expensive. As a result, statistical agencies are beginning to focus more attention on "automatic reporting" (in which the subject of the data submits information regularly) as a data-gathering methodology.

The practical result of the census' ten-year schedule is that many federal programs in 1991 are allocating funds to communities on the basis of conditions that existed in 1979. Data on the number of persons in each locality with incomes below the poverty line, a common factor in federal formulas, are based on persons' incomes in 1979 and the poverty income level as it existed then. Twelve years later, it is small wonder that policymakers raise questions about the equity of fund distributions in programs such as JTPA that use these data.

Sources of Data

Knowledge of the characteristics of data is useful in understanding the differences between data sets that exist as part of the nation's overall statistical system for tracking social and economic conditions, and those that exist as part of the management information systems for administering particular programs.

Data that are part of the statistical system, such as census data, are readily available and widely used in allocation formulas. Their definitions of terms are carefully delineated, their collection methodologies are very precise, and they often exist in highly disaggregated form. These strengths also may give rise to drawbacks, such as the timeliness problem with census data.

In contrast, another kind of data is collected for the purpose of and in the course of program administration. Fuel tax receipts, the number of beneficiaries of income-maintenance programs such as Aid to Families with Dependent Children, and information on climatic conditions such as "heating and cooling degree days" are examples of administrative data currently used in federal allocation formulas.

If the data come from a federal program, the responsible federal agency has defined the terms, the time period to be covered, and the reporting schedule. As a result, administrative data are fairly well systematized. Given the number and variety of federal programs, a tremendous amount of such data is generated. In contrast to surveys and censuses, these data often are automatically reported by their subjects, such as employers or taxpayers, thus forming a relatively low-cost alternative to data obtained by phone calls or house visits. Because of their cost advantages, policymakers increasingly are interested in making administrative data do "double-duty" by using them for additional purposes, including the allocation of federal funds by formula.

An example of this distinction between data from the statistical system and administrative data comes in the realm of employment numbers. The so-called Household Survey is conducted by the Census Bureau for the Bureau of Labor Statistics as part of the Current Population Survey, a random sample survey of the population. On the basis of home visits and phone calls, the survey produces national numbers on persons employed, organized according to the place of their residence. Because it is based on a sample, the Household Survey does not generate local numbers; it produces state numbers for only the 11 largest states. In contrast, the so-called Establishment Survey produces numbers on persons employed, organized according to the location of their employment, based on reports submitted automatically by employers as an adjunct to the management of the unemployment insurance program. Because of its program basis, the Establishment Survey contains disaggregated local numbers, but not figures on persons employed in businesses not covered by UI (such as the self-employed).

In essence, policymakers can have national numbers on the whole employed population, or disaggregated numbers on most of the employed population. However, they must understand the unique characteristics of each

set of data before using these numbers for a purpose other than the one for which they were devised.

Administrative data are collected for management purposes. Thus, the form of the data may not be amenable to other uses. To give a hypothetical example, program managers may need to know the average number of participants in a program per month. For an allocation, it might be useful to know the number of people who participated in the program in a year. Assuming that people stay in the program for varying numbers of months, it is impossible to obtain the second number from the first. This situation in fact occurs in some education programs where management reports use the concept of "average daily attendance" (ADA) as a way of minimizing data distortions that could be caused by day-to-day fluctuations in the school population. For an allocation in a particular program, however, it might be necessary to know the absolute number of school children, not the average. Analysts often are frustrated when they discover that, in all the reams of data collected by federal agencies, the one piece of information they desire is not available. The fault rests not necessarily with the agency, but with the lack of a government-wide vision of how to splice administrative data more effectively into the nation's statistical system.

Another problem with administrative data is that agencies sometimes are loathe to part with information from their programs. Sometimes their reluctance is based on provisions in law to keep the data confidential. Increasingly, however, ways are being found to keep individual data confidential while allowing aggregated data to serve purposes in addition to those for which they were originally collected. The relatively low cost of administrative data, coupled with increasingly sophisticated means of protecting them, promises that they will become more popular as bases for distributing federal funds.

Operationalizing an Allocation Formula

This discussion of the characteristics and sources of data should alert the lawmaker or analyst to a number of considerations behind the legislative words describing a particular federal allocation formula. The data used to *operationalize the formula, i.e. to translate the words into numbers*, probably have strengths and weaknesses from a statistical point of view and other advantages and disadvantages from the perspective of regional policy. Those interested in promoting regional equity should know, for each particular program, how the data to be used in the allocation formula are defined and whether alternative data sets exist that capture the intended concept but distribute funds differently. A good example is poverty data from the decennial census and administrative data from the AFDC program. Both capture the concept of "economic disadvantagement" used in the JTPA legislation but have different effects when applied in this and other allocation formulas.

The foregoing discussion has touched several times on problems with poverty data from the decennial census, particularly their lack of timeliness and their failure to take into account regional differences in the cost of living. In the course of discussions in the last several years about the allocation formula for the

Job Training Partnership Act, the Northeast-Midwest Institute suggested that lawmakers consider using administrative data on the number of AFDC recipients to operationalize JTPA's "economically disadvantaged" factor, rather than using poverty data. Monthly counts of AFDC recipients are available promptly and the data effectively take into account cost-of-living considerations, thus answering two objections to the quality of poverty data. *AFDC data also have a different regional distribution from poverty data.* Substituting AFDC data for poverty data in federal allocation formulas that include an "economically disadvantaged" factor would change the distribution of federal funds without diminishing the targeting intent.

Example: Same Concept, Different Measurements

Measurements of states' ability to pay present a good example of the possibility of using alternative data. Some federal programs include a redistribution policy that allocates funds in inverse proportion to a state's ability to pay for services. When the Medicaid program was originally enacted, lawmakers wanted to ensure a comparable level of medical coverage for poor people from one state to another regardless of each state's own financial capacity. The rates at which the federal government reimburses states for medical treatment for poor people thus differ from state to state.

The Medicaid program uses the state's per-capita income as the measure of the state's ability to pay. However, per-capita income omits two kinds of wealth on which states draw: income that a state's residents receive from out-of-state sources and income produced in-state that is distributed to residents of other states. Corporate dividends are one obvious example of these kinds of income. More significant in terms of their interstate effects are revenues associated with severance taxes on natural resources, especially oil and gas.

To make up for these omissions from the concept of per-capita income, the Treasury Department has developed the concept of Total Taxable Resources (TTR), which assigns portions of these interstate income flows to sending and receiving states. Today TTR generally is considered to be a more appropriate measure of states' ability to pay than per-capita income. Indeed, TTR has gained so much credibility and acceptance that Congress used it as one of the factors in the formula for the Alcohol, Drug Abuse, and Mental Health (ADAMHA) block grant. Recently the General Accounting Office testified before Congress that use of TTR would be appropriate in the Medicaid reimbursement formula as well.

States in the Northeast-Midwest region tend to have somewhat higher per-capita incomes and relatively larger shares of the nation's personal income than other sections of the country (for a variety of reasons, including the cost-of-living considerations discussed above). In contrast, Northeast-Midwest shares of the more comprehensive TTR are somewhat lower. Thus, the substitution of TTR data for personal income data would make a significant difference in federal formula distributions to these states.

The point in time to which the data refer may be important too. For example, funding differences may result when legislation specifies that a formula should use the most recent data versus the most recent *annual* data or the most recent *quarterly* data, and so on. In a formula that uses unemployment data, for instance, fluctuations in unemployment numbers could have a significant effect on the distribution of funds depending on the time period to which the data refer. For the Northeast-Midwest region, with its declining share of national population, use of population counts from the decennial census or annually updated population numbers based on the Current Population Survey, makes a big difference. The latter data would track the decline over the course of the decade and thus result in annual funding reductions in programs with population-based numbers in their formulas. Knowledge of these qualities and quirks in data will help lawmakers to promote allocation formulas more beneficial to the area's interests.

Policymakers need to be aware of their data options not only to understand the formulas of particular interest, but also to remedy data gaps or problems by legislative action. The implementation of congressional policy is so dependent on the data used in allocation formulas that the subject deserves attention in its own right. Some of the inequities in the distribution of federal funds might be addressed, for example, if Congress were to demand disaggregated data on population income levels adjusted for regional costs of living. Such a data set would come much closer to capturing the concept of need embodied in so many allocation formulas than the poverty data set currently used. Other policy areas such as trade and highway construction suffer from woefully inadequate data sets as well. By digging into the data now used in allocation formulas, analysts will become more aware of the gaps that need to be filled in the nation's statistical system.

Mathematical Manipulations of Data

Just as substitution of data sets in a formula factor may produce different distributions of funds, a particular set of data also can be altered by mathematical operations to change the "shape" of the data and the resulting allocations.

Squares and Square-roots of Data

The Medicaid reimbursement formula not only uses an inadequate measure of states' ability to pay for their own services, but it compounds the problem by squaring the data. *Squaring data accentuates the differences among recipient jurisdictions and thus targets aid much more intensively* than the unmanipulated data would. The resulting data set provides a means of distributing federal assistance in situations that are assumed to have a geometric rather than an additive progression. Just looking at simple mathematical progression makes this point clear: the sequence of 2, 3, 4 when squared becomes 4, 9, 16. In the usual formula using simple data, a recipient jurisdiction with four units of the factor in a formula would receive twice the funds of a jurisdiction with two units: if the data are squared, however, the first jurisdiction would receive four times the funds of the second.

Squared data also are used in the formula for the Weatherization Assistance Program for Low-Income Persons. The factor in this case is heating and cooling degree days, an administrative data set produced by the National Oceanic and Atmospheric Administration. When the data are squared, they emphasize the extremes of hot and cold weather that the program seeks to alleviate.

Squaring data is a very powerful targeting tool. In the case of the weatherization program, the mathematical operation furthers the program's goal of dealing with extreme weather conditions. In the Medicaid program, however, the process of squaring magnifies the inequity of measuring states' ability to pay by means of per-capita income.

Taking the square-root of the data has the opposite effect--it deemphasizes differences among jurisdictions. Funds for historic preservation, for example, are distributed partially on the basis of the square root of each state's land area. The State Underground Water Source Protection program uses the square roots of state land area and state population in its formula.

Inverting Data

When data are lacking on a phenomenon that Congress wants to address, it may use a data set that measures an opposite condition. State shares (percentages) of the opposite condition are calculated and then subtracted from the whole number 1, yielding a rough estimate of state shares of the phenomenon addressed by the program. This procedure is used in the Medicaid program, where reimbursement rates are inversely related to the questionable per-capita income measure, discussed above. It also is used in Child Welfare Services and the Foster Care (Title IV-E) program. The existence of this practice points once again to inadequacies in the nation's data system that warrant congressional attention.

Using Rates of Change in Data

Still another option that changes the shape of a data set is the use of rates of change in data from one time period to another. Rates of growth or decline in a particular phenomenon from one jurisdiction to another may look very different from the incidence of the phenomenon itself. The analyst seeking a more favorable formula for a particular program can experiment with calculating the rates of change in the formula's factors to see what effect that operation has on the distribution of funds.

Policymaking Review

These considerations about data allow policymakers and analysts to explore further the questions raised in operationalizing the factors in a formula. Knowing something about the characteristics of data enable one to ask several questions in regard to particular formulas.

Are the data used to run a particular formula the only data that could be used?
Does the law specify which data are to be used?
Is there any discretion in which data can be used?

What alternatives exist?
Are there administrative data sets that could substitute for census data, or vice versa?
What are the strengths and weaknesses of the data used or of alternative data sets?
What are their regional distributions?

Are the data timely?
What time period do they represent: a year? a most recent quarter? an average over time?
Does changing the time period of the data significantly change the distribution?

What effects do various mathematical manipulations of the data have on their distribution?
Do these manipulations of data suggest the existence of gaps and holes in the nation's statistical base?
What data, needed for future federal policy development and policy implementation, should Congress be planning for and authorizing now?

Appendix
A Regional Assessment of Some Common Formula Factors and Data

In its 1987 study *Grant Formulas: A Catalog of Federal Aid to States and Localities*, the General Accounting Office identified close to 500 different factors used in federal allocation formulas. The following pages give a sampling of factors from some of the largest formula programs. While some factors are simple and the data to run them are readily available, others demand that major statistical agencies such as the Census Bureau or the Bureau of Labor Statistics develop specialized subsets of data other than those they routinely publish. For example, while the Census Bureau reports data on state population by age, its standard publication format uses age categories that do not include the categories of "under 21 years old," "18- to 25-year-olds," or "25- to 65-year-olds" called for in particular federal programs. These data sets must be specially constructed.

In addition, many factors require data from administrative records of agencies such as the Department of Health and Human Services or the National Oceanic and Atmospheric Administration. These data may be produced in great variety for administrative purposes, making the determination of exactly which data are used in a particular formula difficult. For example, NOAA reports its monthly data on cooling degree days in a January-to-December format and its information on heating degree days in a July-to-June format. Because the formula for the Weatherization Assistance Program calls for both kinds of data, the exact time frame used is not obvious. In most cases, rather than trying to find the data used in a particular program's formula from published sources or from the producer agency, the analyst is best advised to obtain the data directly from the agency that administers the grant program.

With that caveat, this appendix contains tables of some common data similar to that used in many grant programs. It does not attempt to present an exhaustive catalog of the data used in formulas for two reasons. Given the existence of almost 500 formula factors, a great many distribute only minuscule percentages of federal funds. Also, much of the data used in allocation formulas is revised or updated frequently or specially produced each time a formula is run, rendering any comprehensive compendium out of date quickly. Instead, this appendix aims for the more modest goals of sensitizing readers to the patterns that exist in some familiar and popularly used data sets and alerting them to important elements in other data sets.

The tables present data in the regional format used by the Northeast-Midwest Institute. While the federal government generally publishes state-by-state data either in alphabetical or census region order, the regional format used here allows readers to see if there are any Northeast-Midwest patterns in the data. In most cases, the data are converted into state shares (percentages) by dividing the raw data for each state by their common denominator, the national total. Expressing the data as percentages makes possible an evaluation of the effect of the data in a formula.

Each table is introduced with information on the producer agency and examples of federal grant programs that use these or similar data in their formulas. Also included are comments on the data from a regional perspective. These comments point out patterns in the data that *may or may not hold also* for specific subsets of the data or for similar data used in a particular formula. The comments suggest considerations about data that policymakers and analysts should keep in mind when looking for factors and formulas that could benefit the region.

Factors Used in the Largest Federal Grant Programs

Population Size and Density Measures
- population
- lag in population growth 1960-1980
- state land area
- population per square mile
- number of housing units with 1.01 or more persons per room
- rural population
- urban population
- farm population

Age-Related Measures
- 5-17 year-olds
- 15-19 year-olds
- under 21 year-olds
- 20-24 year-olds
- 18-25 year-olds
- 25-44 year-olds
- 25-64 year-olds
- 25-65 year-olds
- 55-and-over year-olds
- 60-and-over year-olds

Income-Related Measures
- rolling three-year average of state per capita income
- state total taxable resources
- per capita income squared
- poverty population
- poverty population 5-17 years old
- poverty population under 21
- families with incomes between 130% and 185% of poverty level
- children below 130% of poverty level
- households below 150% of poverty level
- population receiving Aid to Families with Dependent Children (AFDC)
- adult welfare population
- children aged 5-17 in families above poverty level receiving AFDC
- rural population in poverty

Transportation-Related Measures
- interstate lane miles
- vehicle miles travelled on interstate routes
- rural and intercity mail route miles
- fixed guideway vehicle miles on which revenues are earned
- total miles of track on which service is provided
- passenger miles squared
- inverse proportion of operating costs of urban mass transit
- number of bus miles travelled during which revenues are earned
- cost of replacing or repairing bridges
- rail-highway crossings
- number of airline passengers enplaned

Employment-Related Measures
- civilian labor force
- unemployed persons
- unemployed persons in excess of 4.5% of labor force
- persons covered by Unemployment Insurance
- unemployed persons in areas with an unemployment rate over 6.5%

Education-Related Measures
- state per-pupil educational expenditures
- federally-connected students
- population 16-and-over with less than high school diploma
- migratory school-age children
- handicapped children under 21 in state schools
- handicapped children 3-21 years old

Energy-Related Measures
- percent of total residential energy used for space heating
- percent of total residential energy used for space cooling
- heating degree days
- cooling degree days

Housing-Related Measures
- low-income renter-occupied dwellings
- low-income owner-occupied dwellings
- number of pre-1940 housing units

Health-Related Measures
- infant mortality rate
- low birth-weight rate

Data: Population

Producer Agency: U.S. Department of Commerce, Bureau of the Census

Frequency of Update: annual

Examples of Federal Formulas that Use These or Similar Data

Program	Weight on this Factor	Fiscal 1990 Appropriation
Community Development Block Grant: Entitlement Grants	25%	$1.921 billion
Social Services Block Grant	100%	$2.747 billion
State and Community Highway Safety	75%	$121.4 million

Comments from a Regional Perspective

Table 1 shows that the Northeast-Midwest region's share of national population declined between the 1980 and the 1990 tallies. The Census Bureau's intercensal estimates, or annual updates, of population numbers show that the decline occurred in incremental stages during these years. It would make a difference, therefore, if a federal program specified the use of decennial census numbers in its formula *versus* the use of the most recent population data (i.e., the annual intercensal updates). The decennial numbers would produce static state shares of funds for each year in the decade, with a "cliff" effect occurring when new numbers became available after a new census. The intercensal numbers would produce steadily declining shares of funds for the Northeast-Midwest region.

While federal programs generally use the most recent numbers when a formula factor calls for total population, the use of decennial numbers *versus* annual intercensal updates is less clear cut in the matter of subsets of the population. Currently, some kinds of data obtained from the census such as the population below the poverty line are not subject to annual updates. If some kinds of data were to be updated, they could adversely affect the Northeast-Midwest region's share of federal funds, especially if the updated numbers were to follow the overall pattern of declining population share for the Northeast and Midwest states.

Table 1. U.S. Population, 1980 and 1990 Censuses

State or Region	1980 Population	Percent of U.S. Total	1990 Population	Percent of U.S. Total
New England				
Connecticut	3,107,576	1.37	3,287,116	1.32
Maine	1,124,660	0.50	1,227,928	0.49
Massachusetts	5,737,037	2.53	6,016,425	2.42
New Hampshire	920,610	0.41	1,109,252	0.45
Rhode Island	947,154	0.42	1,003,464	0.40
Vermont	511,456	0.23	562,758	0.23
Total	12,348,493	5.45	13,206,943	5.31
Mid-Atlantic				
Delaware	594,338	0.26	666,168	0.27
Maryland	4,216,975	1.86	4,781,468	1.92
New Jersey	7,364,823	3.25	7,730,188	3.11
New York	17,558,072	7.75	17,990,455	7.23
Pennsylvania	11,863,895	5.24	11,881,643	4.78
Total	41,598,103	18.36	43,049,922	17.31
Midwest				
Illinois	11,426,518	5.04	11,430,602	4.60
Indiana	5,490,224	2.42	5,544,159	2.23
Iowa	2,913,808	1.29	2,776,755	1.12
Michigan	9,262,078	4.09	9,295,297	3.74
Minnesota	4,075,970	1.80	4,375,099	1.76
Ohio	10,797,630	4.77	10,847,115	4.36
Wisconsin	4,705,767	2.08	4,891,769	1.97
Total	48,671,995	21.48	49,160,796	19.77
South				
Alabama	3,893,888	1.72	4,040,587	1.62
Arkansas	2,286,435	1.01	2,350,725	0.95
District of Columbia	638,333	0.28	606,900	0.24
Florida	9,746,324	4.30	12,937,926	5.20
Georgia	5,463,105	2.41	6,478,216	2.60
Kentucky	3,660,777	1.62	3,685,296	1.48
Louisiana	4,205,900	1.86	4,219,973	1.70
Mississippi	2,520,638	1.11	2,573,216	1.03
North Carolina	5,881,766	2.60	6,628,637	2.67
Oklahoma	3,025,290	1.34	3,145,585	1.26
South Carolina	3,121,820	1.38	3,486,703	1.40
Tennessee	4,591,120	2.03	4,877,185	1.96
Texas	14,229,191	6.28	16,986,510	6.83
Virginia	5,346,818	2.36	6,187,358	2.49
West Virginia	1,949,644	0.86	1,793,477	0.72
Total	70,561,049	31.15	79,998,294	32.17

Table 1. U.S. Population, 1980 and 1990 Censuses (continued)

State or Region	1980 Population	Percent of U.S. Total	1990 Population	Percent of U.S. Total
West				
Alaska	401,851	0.18	550,043	0.22
Arizona	2,718,215	1.20	3,665,228	1.47
California	23,667,902	10.45	29,760,021	11.97
Colorado	2,889,964	1.28	3,294,394	1.32
Hawaii	964,691	0.43	1,108,229	0.45
Idaho	943,935	0.42	1,006,749	0.40
Kansas	2,363,679	1.04	2,477,574	1.00
Missouri	4,916,686	2.17	5,117,073	2.06
Montana	786,690	0.35	799,065	0.32
Nebraska	1,569,825	0.69	1,578,385	0.63
Nevada	800,493	0.35	1,201,833	0.48
New Mexico	1,302,894	0.58	1,515,069	0.61
North Dakota	652,717	0.29	638,800	0.26
Oregon	2,633,105	1.16	2,842,321	1.14
South Dakota	690,768	0.30	696,004	0.28
Utah	1,461,037	0.64	1,722,850	0.69
Washington	4,132,156	1.82	4,866,692	1.96
Wyoming	469,557	0.21	453,588	0.18
Total	53,366,165	23.56	63,293,918	25.45
Northeast	53,946,596	23.81	56,256,865	22.62
Midwest	48,671,995	21.48	49,160,796	19.77
Northeast and Midwest	102,618,591	45.30	105,417,661	42.39
South	70,561,049	31.15	79,998,294	32.17
West	53,366,165	23.56	63,293,918	25.45
South and West	123,927,214	54.70	143,292,212	57.61
U.S. Total	226,545,805	100.00	248,709,873	100.00

SOURCES: Northeast-Midwest staff calculations based on U.S. Department of Commerce, Bureau of the Census, *1990 Census of Population, General Social and Economic Characteristics, U.S. Summary*, and *1990 Census of Population* Tape File 1A (Washington, D.C., 1981 and 1991).

Data: Unadjusted and Adjusted Population

Producer Agency: U.S. Department of Commerce, Bureau of the Census

Frequency of Update: annual

Examples of Federal Formulas that Use These or Similar Data

Program	Weight on this Factor	Fiscal 1990 Appropriation
Community Development Block Grant: Entitlement Grants	25%	$1.921 billion
Social Services Block Grant	100%	$2.747 billion
State and Community Highway Safety	75%	$121.4 million

Comments from a Regional Perspective

Table 2 shows the difference between the data obtained from the head count of the population in the 1990 census *versus* the data obtained by statistically adjusting the numbers to include uncounted persons. The Census Bureau's undercount was particularly pronounced among Hispanic persons and along the Mexican border. Therefore, the Northeast-Midwest region's share of population is lower using the adjusted numbers. If adjusted numbers were to be used in federal allocations formulas, the Northeast-Midwest region would receive a smaller share of federal funds.

The issue of whether to use adjusted or unadjusted data, while resolved for purposes of congressional apportionment, will be a source of debate not only for federal allocation formulas but in other applications as well. For example, if adjusted numbers are used to design the sample for the Current Population Survey, the pattern of the adjusted numbers will creep into the Census Bureau's annual intercensal updates of state population numbers and population subsets (see discussion on Table 1).

Table 2. Unadjusted and Adjusted U.S. Population, 1990 Census and Post Enumeration Survey

State or Region	Unadjusted Population	Percent of U.S. Total	Adjusted Population	Percent of U.S. Total
New England				
Connecticut	3,287,116	1.32	3,306,000	1.30
Maine	1,227,928	0.49	1,240,000	0.49
Massachusetts	6,016,425	2.42	6,039,000	2.38
New Hampshire	1,109,252	0.45	1,116,000	0.44
Rhode Island	1,003,464	0.40	1,006,000	0.40
Vermont	562,758	0.23	571,000	0.22
Total	13,206,943	5.31	13,278,000	5.23
Mid-Atlantic				
Delaware	666,168	0.27	687,000	0.27
Maryland	4,781,468	1.92	4,869,000	1.92
New Jersey	7,730,188	3.11	7,836,000	3.09
New York	17,990,455	7.23	18,304,000	7.21
Pennsylvania	11,881,643	4.78	11,957,000	4.71
Total	43,049,922	17.31	43,653,000	17.19
Midwest				
Illinois	11,430,602	4.60	11,592,000	4.56
Indiana	5,544,159	2.23	5,586,000	2.20
Iowa	2,776,755	1.12	2,807,000	1.11
Michigan	9,295,297	3.74	9,404,000	3.70
Minnesota	4,375,099	1.76	4,419,000	1.74
Ohio	10,847,115	4.36	10,933,000	4.30
Wisconsin	4,891,769	1.97	4,924,000	1.94
Total	49,160,796	19.77	49,665,000	19.55
South				
Alabama	4,040,587	1.62	4,146,000	1.63
Arkansas	2,350,725	0.95	2,403,000	0.95
District of Columbia	606,900	0.24	639,000	0.25
Florida	12,937,926	5.20	13,278,000	5.23
Georgia	6,478,216	2.60	6,633,000	2.61
Kentucky	3,685,296	1.48	3,768,000	1.48
Louisiana	4,219,973	1.70	4,332,000	1.71
Mississippi	2,573,216	1.03	2,632,000	1.04
North Carolina	6,628,637	2.67	6,815,000	2.68
Oklahoma	3,145,585	1.26	3,214,000	1.27
South Carolina	3,486,703	1.40	3,590,000	1.41
Tennessee	4,877,185	1.96	5,012,000	1.97
Texas	16,986,510	6.83	17,551,000	6.91
Virginia	6,187,358	2.49	6,353,000	2.50
West Virginia	1,793,477	0.72	1,842,000	0.73
Total	79,998,294	32.17	82,208,000	32.37

Table 2. Unadjusted and Adjusted U.S. Population, 1990 Census and Post Enumeration Survey (continued)

State or Region	Unadjusted Population	Percent of U.S. Total	Adjusted Population	Percent of U.S. Total
West				
Alaska	550,043	0.22	561,000	0.22
Arizona	3,665,228	1.47	3,790,000	1.49
California	29,760,021	11.97	30,888,000	12.16
Colorado	3,294,394	1.32	3,376,000	1.33
Hawaii	1,108,229	0.45	1,136,000	0.45
Idaho	1,006,749	0.40	1,035,000	0.41
Kansas	2,477,574	1.00	2,506,000	0.99
Missouri	5,117,073	2.06	5,184,000	2.04
Montana	799,065	0.32	822,000	0.32
Nebraska	1,578,385	0.63	1,595,000	0.63
Nevada	1,201,833	0.48	1,232,000	0.49
New Mexico	1,515,069	0.61	1,586,000	0.62
North Dakota	638,800	0.26	648,000	0.26
Oregon	2,842,321	1.14	2,898,000	1.14
South Dakota	696,004	0.28	707,000	0.28
Utah	1,722,850	0.69	1,757,000	0.69
Washington	4,866,692	1.96	4,987,000	1.96
Wyoming	453,588	0.18	466,000	0.18
Total	63,293,918	25.45	65,174,000	25.66
Northeast	56,256,865	22.62	56,931,000	22.42
Midwest	49,160,796	19.77	49,665,000	19.55
Northeast and Midwest	105,417,661	42.39	106,596,000	41.97
South	79,998,294	32.17	82,208,000	32.37
West	63,293,918	25.45	65,174,000	25.66
South and West	143,292,212	57.61	147,382,000	58.03
U.S. Total	248,709,873	100.00	253,978,000	100.00

SOURCES: Northeast-Midwest staff calculations based on U.S. Department of Commerce, Bureau of the Census, "Census Bureau Releases Refined Estimates from Post Enumeration Survey of 1990 Census Coverage," Table 1, news release, Washington, D.C., June 13, 1991.

Data: Population by Age

Producer Agency: U.S. Department of Commerce, Bureau of the Census

Frequency of Update: annual

Examples of Federal Formulas that Use These or Similar Data

Program	Weight on this Factor	Fiscal 1990 Appropriation
Improving School Programs, State Block Grants--population 5-17	100%	$443.9 million
Older Americans Act, Supportive Services--population 60 and over	100%	$267.7 million

Comments from a Regional Perspective

Table 3 calls into question the assumption made for discussion purposes on Table 1 that subsets of the population are distributed according to same pattern as the population as a whole. Table 3 compares state shares of total population, population 5-to-17 years old, and population 65 years and older. The table shows that the Northeast-Midwest region's share of the younger age category is smaller and its share of the older age category is larger than its share of the overall population. Thus, the region receives a larger share of funds under programs geared to older citizens than it does under programs aimed at the school-age population.

The table alerts readers to the necessity of checking the actual numbers used in a particular allocation formula rather than relying on knowledge of the pattern that exists in the larger data set from which the numbers are drawn. Readers should note also that the table displays data for the population 65 and older, while the actual data used for the program example cited above, the Older Americans Act, calls for data on the population 60 and older. As indicated earlier, situations exist where the Census Bureau's standard publication format uses one set of age categories, while an allocation formula calls for a slightly different breakout of data. Whether the distribution of the 60-plus population is the same as the 65-plus population is a question for the regional analyst to explore.

Table 3. U.S. Population and Population by Various Age Categories, 1990 Census (in thousands)

State or Region	Total Population	Percent of U.S. Total	Population 5 - 17	Percent of U.S. Total	Population Over 65	Percent of U.S. Total
New England						
Connecticut	3,287	1.32	521	1.15	446	1.43
Maine	1,228	0.49	223	0.49	163	0.52
Massachusetts	6,016	2.42	941	2.08	819	2.62
New Hampshire	1,109	0.45	194	0.43	125	0.40
Rhode Island	1,003	0.40	159	0.35	151	0.48
Vermont	563	0.23	102	0.23	66	0.21
Total	13,207	5.31	2,140	4.73	1,770	5.67
Mid-Atlantic						
Delaware	666	0.27	115	0.25	81	0.26
Maryland	4,781	1.92	804	1.78	517	1.66
New Jersey	7,730	3.11	1,267	2.80	1,032	3.30
New York	17,990	7.23	3,004	6.64	2,364	7.57
Pennsylvania	11,882	4.78	1,998	4.41	1,829	5.85
Total	43,050	17.31	7,187	15.88	5,823	18.64
Midwest						
Illinois	11,431	4.60	2,098	4.64	1,437	4.60
Indiana	5,544	2.23	1,057	2.34	696	2.23
Iowa	2,777	1.12	526	1.16	426	1.36
Michigan	9,295	3.74	1,756	3.88	1,108	3.55
Minnesota	4,375	1.76	830	1.83	547	1.75
Ohio	10,847	4.36	2,015	4.45	1,407	4.50
Wisconsin	4,892	1.97	928	2.05	651	2.08
Total	49,161	19.77	9,210	20.35	6,272	20.08
South						
Alabama	4,041	1.62	775	1.71	523	1.67
Arkansas	2,351	0.95	456	1.01	350	1.12
District of Columbia	607	0.24	80	0.18	78	0.25
Florida	12,938	5.20	2,017	4.46	2,369	7.58
Georgia	6,478	2.60	1,232	2.72	654	2.09
Kentucky	3,685	1.48	703	1.55	467	1.49
Louisiana	4,220	1.70	893	1.97	469	1.50
Mississippi	2,573	1.03	551	1.22	321	1.03
North Carolina	6,629	2.67	1,147	2.54	804	2.57
Oklahoma	3,146	1.26	610	1.35	424	1.36
South Carolina	3,487	1.40	664	1.47	397	1.27
Tennessee	4,877	1.96	883	1.95	619	1.98
Texas	16,987	6.83	3,446	7.61	1,717	5.49
Virginia	6,187	2.49	1,062	2.35	664	2.13
West Virginia	1,793	0.72	337	0.74	269	0.86
Total	79,998	32.17	14,856	32.83	10,126	32.41

Table 3. U.S. Population and Population by Various Age Categories, 1990 Census (continued) (in thousands)

State or Region	Total Population	Percent of U.S. Total	Population 5 - 17	Percent of U.S. Total	Population Over 65	Percent of U.S. Total
West						
Alaska	550	0.22	117	0.26	22	0.07
Arizona	3,665	1.47	688	1.52	479	1.53
California	29,760	11.97	5,353	11.83	3,136	10.04
Colorado	3,294	1.32	608	1.34	329	1.05
Hawaii	1,108	0.45	197	0.44	125	0.40
Idaho	1,007	0.40	228	0.50	121	0.39
Kansas	2,478	1.00	473	1.05	343	1.10
Missouri	5,117	2.06	946	2.09	718	2.30
Montana	799	0.32	163	0.36	106	0.34
Nebraska	1,578	0.63	309	0.68	223	0.71
Nevada	1,202	0.48	205	0.45	128	0.41
New Mexico	1,515	0.61	321	0.71	163	0.52
North Dakota	639	0.26	128	0.28	91	0.29
Oregon	2,842	1.14	523	1.16	391	1.25
South Dakota	696	0.28	144	0.32	102	0.33
Utah	1,723	0.69	458	1.01	150	0.48
Washington	4,867	1.96	895	1.98	575	1.84
Wyoming	454	0.18	101	0.22	47	0.15
Total	63,294	25.45	11,856	26.20	7,250	23.21
Northeast	56,257	22.62	9,327	20.61	7,593	24.31
Midwest	49,161	19.77	9,210	20.35	6,272	20.08
Northeast and Midwest	105,418	42.39	18,537	40.97	13,866	44.38
South	79,998	32.17	14,856	32.83	10,126	32.41
West	63,294	25.45	11,856	26.20	7,250	23.21
South and West	143,292	57.61	26,713	59.03	17,376	55.62
U.S. Total	248,710	100.00	45,250	100.00	31,242	100.00

SOURCES: Northeast-Midwest staff calculations based on U.S. Department of Commerce, Bureau of the Census, *Selected Population and Housing Characteristics for 1990*, Tape File 1A (Washington, D.C., 1991).

Data: Poverty

Producer Agency: U.S. Department of Commerce, Bureau of the Census

Frequency of Update: every ten years

Examples of Federal Formulas that Use These or Similar Data

Program	Weight on this Factor	Fiscal 1990 Appropriation
Job Training Partnership Act -- Title IIA	33 1/3%	$1.661 billion
Community Development Block Grants: Small Cities -- Formula A	50%	$798.4 million
Community Development Block Grants: Small Cities -- Formula B	30%	$798.4 million

Comments from a Regional Perspective

Table 4 displays two types of data routinely published by the Census Bureau: the poverty population and the population below 150 percent of the poverty level. Referring back to the previous tables, it is clear that the distribution of the poverty population differs considerably from that of the overall population. In particular, the Northeast-Midwest region's share of the poverty population and the population below 150 percent of poverty is substantially smaller than its share of total population.

The reason for this disparity lies in the way poverty is defined. Poverty data are derived from one national standard which fails to take into account differences in the cost of living. While persons above the poverty line in relatively high cost-of-living states, such as those in the Northeast and Midwest, may actually be worse off than persons below the poverty line in low cost-of-living areas, such as the South, the poverty data do not allow for this fact of life. Thus, using poverty data in allocation formulas as a proxy to measure economic hardship is detrimental to Northeast-Midwest interests. This problem may be compounded in formulas that require subsets of the data, such as children in poverty. Given the Northeast-Midwest's relatively small share of 5 to 17-year-olds (see Table 3), regional analysts should be wary of such factors.

Table 4 also highlights the fact the substituting data on 150 percent of poverty for the poverty data does not correct for this regional inequity. The main effect of this substitution is to shift money out of the South and into the West. Note also that the standard Census Bureau reporting categories displayed on this table do not include some of the other poverty-related measures used in federal formulas, such as 130 percent and 185 percent of poverty. These data sets probably have distributions similar to the ones shown.

Table 4. Poverty and 150 Percent of Poverty, 1980 Census

State or Region	Persons Below Poverty Level	Percent of U.S. Total	Persons Below 150 Percent of Poverty Level	Percent of U.S. Total
New England				
Connecticut	242,650	0.89	429,234	0.90
Maine	140,996	0.51	281,629	0.59
Massachusetts	532,458	1.94	993,509	2.07
New Hampshire	75,364	0.28	151,580	0.32
Rhode Island	93,959	0.34	177,321	0.37
Vermont	59,059	0.22	116,116	0.24
Total	1,144,486	4.18	2,149,389	4.49
Mid-Atlantic				
Delaware	68,408	0.25	116,583	0.24
Maryland	404,560	1.48	696,006	1.45
New Jersey	689,491	2.52	1,185,982	2.48
New York	2,298,922	8.39	3,871,310	8.08
Pennsylvania	1,209,819	4.42	2,187,033	4.57
Total	4,671,200	17.05	8,056,915	16.82
Midwest				
Illinois	1,230,541	4.49	1,998,726	4.17
Indiana	516,190	1.88	956,117	2.00
Iowa	286,173	1.04	521,750	1.09
Michigan	945,915	3.45	1,630,334	3.40
Minnesota	374,956	1.37	685,185	1.43
Ohio	1,088,962	3.98	1,891,647	3.95
Wisconsin	397,813	1.45	774,359	1.62
Total	4,840,550	17.67	8,458,118	17.66
South				
Alabama	719,905	2.63	1,189,660	2.48
Arkansas	423,552	1.55	735,155	1.53
District of Columbia	113,356	0.41	168,485	0.35
Florida	1,287,056	4.70	2,294,531	4.79
Georgia	884,383	3.23	1,489,155	3.11
Kentucky	626,240	2.29	1,039,238	2.17
Louisiana	764,848	2.79	1,198,612	2.50
Mississippi	587,450	2.14	937,835	1.96
North Carolina	839,950	3.07	1,517,347	3.17
Oklahoma	393,866	1.44	715,720	1.49
South Carolina	500,363	1.83	864,934	1.81
Tennessee	736,471	2.69	1,253,412	2.62
Texas	2,035,873	7.43	3,443,394	7.19
Virginia	611,310	2.23	1,089,769	2.28
West Virginia	286,995	1.05	501,489	1.05
Total	10,811,618	39.47	18,438,737	38.50

Table 4. Poverty and 150 Percent of Poverty, 1980 Census (continued)

State or Region	Persons Below Poverty Level	Percent of U.S. Total	Persons Below 150 Percent of Poverty Level	Percent of U.S. Total
West				
Alaska	41,615	0.15	70,474	0.15
Arizona	351,365	1.28	618,238	1.29
California	2,626,580	9.59	4,783,065	9.99
Colorado	284,898	1.04	517,750	1.08
Hawaii	91,618	0.33	176,136	0.37
Idaho	116,808	0.43	225,080	0.47
Kansas	231,718	0.85	436,142	0.91
Missouri	582,252	2.13	1,053,349	2.20
Montana	94,280	0.34	174,166	0.36
Nebraska	163,326	0.60	306,078	0.64
Nevada	68,657	0.25	131,766	0.28
New Mexico	225,513	0.82	386,741	0.81
North Dakota	79,324	0.29	147,421	0.31
Oregon	274,159	1.00	501,817	1.05
South Dakota	112,739	0.41	195,088	0.41
Utah	148,005	0.54	290,167	0.61
Washington	395,601	1.44	707,552	1.48
Wyoming	36,268	0.13	70,339	0.15
Total	5,924,726	21.63	10,791,371	22.53
Northeast	5,815,686	21.23	10,206,304	21.31
Midwest	4,840,550	17.67	8,458,118	17.66
Northeast and Midwest	10,656,236	38.90	18,664,422	38.97
South	10,811,618	39.47	18,438,737	38.50
West	5,924,726	21.63	10,791,371	22.53
South and West	16,736,344	61.10	29,230,107	61.03
U.S. Total	27,392,580	100.00	47,894,530	100.00

SOURCES: Northeast-Midwest staff calculations based on U.S. Department of Commerce, Bureau of the Census, *1980 Census of Population, General Social and Economic Characteristics, U.S. Summary*, Table 245 (Washington, D.C., 1981).

Data: AFDC Population

Producer Agency: U.S. Department of Health and Human Services, Office of Family Assistance

Frequency of Update: monthly data, published annually

Examples of Federal Formulas that Use These or Similar Data

Program	Weight on this Factor	Fiscal 1990 Appropriation
Head Start	33 1/3%	$1.186 billion
Chapter 1 -- Educationally Deprived Children in LEAs	partial	$3.839 billion

Comments from a Regional Perspective

Table 5 presents data on economic hardship as measured by number of persons receiving Aid to Families with Dependent Children. The distribution of this population differs substantially from the distribution of the poverty population (see Table 4) because the income-based eligibility standards for AFDC implicitly take into consideration differences in the cost of living among states, a critical factor omitted from the poverty data. Note, for example, that the Northeast-Midwest region's share of the AFDC population is 46.76 percent, while its share of the poverty population is 38.90 percent. Thus, the Northeast-Midwest benefits when AFDC data are used in allocation formulas.

AFDC data have an additional advantage over poverty data in their timeliness. Poverty data currently are available only every ten years, whereas AFDC data are published annually (and collected even more frequently).

The data presented in Table 5 are somewhat different from the data used in the two programs cited above. Head Start actually uses counts of AFDC children of ages from birth to 18 years old. This data set is slightly less advantageous to the Northeast-Midwest region than Table 5's data on the total AFDC population. Chapter 1 requires that head counts of children over the poverty level receiving AFDC be added to the counts of children in poverty. The total is then multiplied by a variable cost factor based on each state's per pupil expenditures. For this reason, it is not possible to state precisely the weight that AFDC data has in the Chapter 1 formula.

Table 5. Recipients of Aid to Families with Dependent Children: Fiscal 1989

State or Region	Average Number of Recipients Each Month	Percent of U.S. Total
New England		
Connecticut	106,187	0.99
Maine	50,801	0.47
Massachusetts	241,696	2.25
New Hampshire	12,716	0.12
Rhode Island	41,900	0.39
Vermont	19,723	0.18
Total	473,022	4.40
Mid-Atlantic		
Delaware	19,189	0.18
Maryland	176,135	1.64
New Jersey	297,796	2.77
New York	979,136	9.12
Pennsylvania	522,682	4.87
Total	1,994,937	18.57
Midwest		
Illinois	632,182	5.89
Indiana	147,385	1.37
Iowa	97,590	0.91
Michigan	639,889	5.96
Minnesota	163,542	1.52
Ohio	629,106	5.86
Wisconsin	244,876	2.28
Total	2,554,571	23.78
South		
Alabama	129,037	1.20
Arkansas	69,633	0.65
District of Columbia	47,860	0.45
Florida	326,764	3.04
Georgia	265,879	2.48
Kentucky	155,722	1.45
Louisiana	276,574	2.57
Mississippi	178,834	1.66
North Carolina	200,277	1.86
Oklahoma	103,043	0.96
South Carolina	107,461	1.00
Tennessee	195,481	1.82
Texas	539,858	5.03
Virginia	145,622	1.36
West Virginia	109,294	1.02
Total	2,851,338	26.55

Table 5. Recipients of Aid to Families with Dependent Children: Fiscal 1989 (continued)

State or Region	Average Number of Recipients Each Month	Percent of U.S. Total
West		
Alaska	19,423	0.18
Arizona	105,380	0.98
California	1,762,931	16.41
Colorado	97,312	0.91
Hawaii	42,783	0.40
Idaho	16,819	0.16
Kansas	73,869	0.69
Missouri	203,109	1.89
Montana	27,694	0.26
Nebraska	41,026	0.38
Nevada	20,142	0.19
New Mexico	58,677	0.55
North Dakota	15,292	0.14
Oregon	87,288	0.81
South Dakota	18,928	0.18
Utah	43,627	0.41
Washington	219,273	2.04
Wyoming	13,737	0.13
Total	2,867,308	26.69
Northeast	2,467,958	22.98
Midwest	2,554,571	23.78
Northeast and Midwest	5,022,529	46.76
South	2,851,338	26.55
West	2,867,308	26.69
South and West	5,718,646	53.24
U.S. Total	10,741,175	100.00

SOURCE: Northeast-Midwest staff calculations based on U.S. Department of Health and Human Services, Family Support Administration, Office of Family Assistance, *Quarterly Public Assistance Statistics, FY 1989* (Washington, D.C., 1991).

Data: Total Taxable Resources and Total Personal Income

Producer Agency: U.S. Department of Treasury, Office of Economic Policy and Bureau of Economic Analysis

Frequency of Update: annual

Examples of Federal Formulas that Use These or Similar Data

Program	Weight on this Factor	Fiscal 1990 Appropriation
Medicaid -- Total Personal Income	partial	$41.103 billion
Alcohol, Drug Abuse and Mental Health Services Block Grant -- Total Taxable Resources	partial	$1.116 billion

Comments from a Regional Perspective

Table 6 compares two alternative measures of state wealth that are used in formulas in which Congress seeks to accommodate differences among the states in their ability to pay for services. In general, these measures are used inversely with the intention of awarding proportionately more funds to poorer states. Total personal income enters into calculations for Medicaid and the other programs that use the Medicaid formula, such as Aid to Families with Dependent Children, as the numerator in the computation of state per-capita income, which is then squared and inverted. Additional calculations render a reimbursement rate for each state for Medicaid, with the minimum rate set at 50 percent. The alternative concept, total taxable resources, is used in the ADAMHA Block Grant to weight the population factors used in that formula.

Total taxable resources is the more comprehensive of the two measures of state wealth because, in addition to resident personal income, it includes portions of interstate flows of wealth: that produced in a state but received by non-residents and that produced elsewhere but received by residents. Severance taxes on natural resources, such as oil and gas, are one of the most important components of these flows. Formulas that look only at personal income, excluding these additional sources of state wealth, overstate the ability of northeastern and midwestern states to pay for services.

In addition to its failure to measure completely states' ability to pay, total personal income and the related measure, per-capita income, suffer from the defect noted on Table with regard to the measurement of poverty: failure to consider regional differences in the cost of living. Thus, whether total personal income is used to measure personal wealth or states' ability to pay, the concept is both deficient analytically and disadvantageous to the Northeast-Midwest region.

Table 6. Total Taxable Resources and Total Personal Income, 1989
(in millions of dollars)

State or Region	Total Taxable Resources 1989	TTR as Percent of U.S. Total	Total Personal Income 1989	TPI as Percent of U.S. Total
New England				
Connecticut	91,819	1.78	80,309	1.84
Maine	23,586	0.46	20,081	0.46
Massachusetts	149,932	2.90	131,403	3.00
New Hampshire	25,556	0.49	22,546	0.52
Rhode Island	20,079	0.39	18,092	0.41
Vermont	11,318	0.22	9,434	0.22
Total	322,290	6.24	281,865	6.44
Mid-Atlantic				
Delaware	15,199	0.29	12,693	0.29
Maryland	107,499	2.08	98,231	2.24
New Jersey	209,600	4.06	182,882	4.18
New York	441,626	8.55	374,692	8.56
Pennsylvania	237,390	4.60	209,200	4.78
Total	1,011,314	19.58	877,698	20.06
Midwest				
Illinois	258,282	5.00	220,389	5.04
Indiana	105,060	2.03	88,808	2.03
Iowa	52,755	1.02	44,856	1.02
Michigan	187,253	3.63	163,269	3.73
Minnesota	92,412	1.79	77,334	1.77
Ohio	212,100	4.11	180,197	4.12
Wisconsin	94,772	1.84	80,979	1.85
Total	1,002,633	19.41	855,832	19.56
South				
Alabama	67,399	1.30	56,698	1.30
Arkansas	37,048	0.72	31,290	0.71
District of Columbia	27,706	0.54	13,600	0.31
Florida	246,459	4.77	225,361	5.15
Georgia	126,318	2.45	104,107	2.38
Kentucky	63,374	1.23	51,596	1.18
Louisiana	73,097	1.42	56,820	1.30
Mississippi	37,412	0.72	31,089	0.71
North Carolina	124,899	2.42	101,440	2.32
Oklahoma	53,132	1.03	45,691	1.04
South Carolina	58,601	1.13	48,344	1.10
Tennessee	89,157	1.73	72,912	1.67
Texas	325,544	6.30	263,558	6.02
Virginia	136,428	2.64	115,546	2.64
West Virginia	27,557	0.53	23,041	0.53
Total	1,494,128	28.93	1,241,093	28.36

Table 6. Total Taxable Resources and Total Personal Income, 1989 (continued)
(in millions of dollars)

State or Region	Total Taxable Resources 1989	TTR as Percent of U.S. Total	Total Personal Income 1989	TPI as Percent of U.S. Total
West				
Alaska	16,445	0.32	11,276	0.26
Arizona	65,492	1.27	55,652	1.27
California	688,856	13.34	576,489	13.17
Colorado	67,499	1.31	58,315	1.33
Hawaii	24,925	0.48	20,417	0.47
Idaho	16,521	0.32	14,153	0.32
Kansas	49,148	0.95	41,916	0.96
Missouri	100,292	1.94	85,163	1.95
Montana	13,366	0.26	11,548	0.26
Nebraska	30,765	0.60	25,772	0.59
Nevada	26,324	0.51	20,919	0.48
New Mexico	24,650	0.48	20,240	0.46
North Dakota	10,954	0.21	9,047	0.21
Oregon	52,854	1.02	45,409	1.04
South Dakota	11,481	0.22	10,022	0.23
Utah	27,218	0.53	22,287	0.51
Washington	97,923	1.90	84,408	1.93
Wyoming	9,596	0.19	6,844	0.16
Total	1,334,306	25.84	1,119,877	25.59
Northeast	1,333,604	25.82	1,159,563	26.50
Midwest	1,002,633	19.41	855,832	19.56
Northeast and Midwest	2,336,237	45.23	2,015,395	46.05
South	1,494,128	28.93	1,241,093	28.36
West	1,334,306	25.84	1,119,877	25.59
South and West	2,828,434	54.77	2,360,970	53.95
U.S. Total	5,164,671	100.00	4,376,365	100.00

SOURCES: Northeast-Midwest staff calculations based on U.S. Department of Treasury, Office of Economic Policy, computer run, based on Bureau of Economic Analysis estimates of Gross State Product and Personal Income, Washington, D.C., November 29, 1991; and U.S. Department of Commerce, Economic Bulletin Board, TPI file, Washington, D.C., September 19, 1991.

Data: Heating and Cooling Degree Days

Producer Agency: U.S. Department of Commerce, National Oceanic and Atmospheric Administration

Frequency of Update: monthly data, published annually

Examples of Federal Formulas that Use These or Similar Data

Program	Weight on this Factor	Fiscal 1990 Appropriation
Weatherization Assistance for Low-Income Persons	partial	$156 million

Comments from a Regional Perspective

Table 7 shows two kinds of data with marked regional distributions: heating degree days and cooling degree days. The data measure the duration and intensity of temperatures below or above 65 degrees Fahrenheit. Data on heating degree days favor the Northeast-Midwest and other northern states, while the data on cooling degree days favor the South. Note how the pattern of state shares becomes even more dramatic when the raw data are squared and then converted into state shares (columns 3 and 6), as happens in the formula for the Weatherization Assistance Program. It is not possible to state precisely the weight that heating and cooling degree day data has in the weatherization formula because the data are multiplied by data on residential energy use that varies by state and multiplied further by information on percentages of low-income owner- and renter-occupied dwellings in each state.

The data on heating and cooling degree days also present an interesting case of the subtle pervasiveness of two issues discussed with reference to Tables 1 and 2: annual intercensal updating of census numbers and the possible use of adjusted population numbers in place of the census head count numbers. Heating and cooling degree day data are developed by taking temperature readings from area weather stations and weighting them by area population numbers. Throughout the 1980s, NOAA used the 1980 population numbers to weight its temperature data. The discussions on Tables 1 and 2 raise the question of which population numbers will be used in the development of heating and cooling degree day data for the 1990s.

Table 7. Heating and Cooling Degree Days: July 1989 - June 1990

State or Region	Heating Degree Days (HDD)	HDD Percent of U.S. Total	HDD[2] Percent of U.S. Total	Cooling Degree Days (CDD)	CDD Percent of U.S. Total	CDD[2] Percent of U.S. Total
New England						
Connecticut	6,025	2.39	2.43	644	1.19	0.46
Maine	8,285	3.28	4.60	270	0.50	0.08
Massachusetts	6,444	2.55	2.78	472	0.87	0.25
New Hampshire	7,611	3.02	3.88	350	0.65	0.13
Rhode Island	5,859	2.32	2.30	556	1.03	0.34
Vermont	8,176	3.24	4.48	264	0.49	0.08
Total	42,400	16.80	20.46	2,556	4.74	1.33
Mid-Atlantic						
Delaware	4,443	1.76	1.32	1,064	1.97	1.25
Maryland	4,526	1.79	1.37	976	1.81	1.05
New Jersey	5,273	2.09	1.86	753	1.40	0.62
New York	5,848	2.32	2.29	644	1.19	0.46
Pennsylvania	5,758	2.28	2.22	605	1.12	0.40
Total	25,848	10.24	9.07	4,042	7.49	3.78
Midwest						
Illinois	6,119	2.42	2.51	810	1.50	0.72
Indiana	5,790	2.29	2.25	772	1.43	0.66
Iowa	6,743	2.67	3.04	836	1.55	0.77
Michigan	6,760	2.68	3.06	498	0.92	0.27
Minnesota	8,386	3.32	4.71	472	0.87	0.25
Ohio	5,836	2.31	2.28	641	1.19	0.45
Wisconsin	7,549	2.99	3.82	456	0.84	0.23
Total	47,183	18.70	21.66	4,485	8.31	3.35
South						
Alabama	2,708	1.07	0.49	2,027	3.76	4.52
Arkansas	3,133	1.24	0.66	1,901	3.52	3.98
District of Columbia	4,526	1.79	1.37	976	1.81	1.05
Florida	615	0.24	0.03	3,836	7.11	16.20
Georgia	2,534	1.00	0.43	1,992	3.69	4.37
Kentucky	4,380	1.74	1.28	1,130	2.09	1.41
Louisiana	1,735	0.69	0.20	2,701	5.00	8.03
Mississippi	2,464	0.98	0.41	2,170	4.02	5.18
North Carolina	3,196	1.27	0.68	1,522	2.82	2.55
Oklahoma	3,434	1.36	0.79	2,035	3.77	4.56
South Carolina	2,457	0.97	0.40	2,051	3.80	4.63
Tennessee	3,871	1.53	1.00	1,371	2.54	2.07
Texas	1,978	0.78	0.26	2,744	5.08	8.29
Virginia	4,115	1.63	1.13	1,083	2.01	1.29
West Virginia	5,153	2.04	1.78	728	1.35	0.58
Total	46,299	18.35	10.92	28,267	52.38	68.70

Table 7. Heating and Cooling Degree Days: July 1989 - June 1990 (continued)

State or Region	Heating Degree Days (HDD)	HDD Percent of U.S. Total	HDD² Percent of U.S. Total	Cooling Degree Days (CDD)	CDD Percent of U.S. Total	CDD² Percent of U.S. Total
West						
Alaska	0	0.00	0.00	0	0.00	0.00
Arizona	2,085	0.83	0.29	2,851	5.28	8.95
California	2,435	0.96	0.40	965	1.79	1.02
Colorado	7,187	2.85	3.46	285	0.53	0.09
Hawaii	0	0.00	0.00	0	0.00	0.00
Idaho	6,457	2.56	2.79	558	1.03	0.34
Kansas	4,915	1.95	1.62	1,557	2.88	2.67
Missouri	5,014	1.99	1.68	1,288	2.39	1.83
Montana	7,632	3.02	3.90	303	0.56	0.10
Nebraska	6,291	2.49	2.65	1,045	1.94	1.20
Nevada	3,913	1.55	1.03	1,828	3.39	3.68
New Mexico	4,667	1.85	1.46	937	1.74	0.97
North Dakota	8,767	3.47	5.15	474	0.88	0.25
Oregon	5,000	1.98	1.67	316	0.59	0.11
South Dakota	7,278	2.88	3.55	799	1.48	0.70
Utah	6,032	2.39	2.44	821	1.52	0.74
Washington	5,246	2.08	1.84	278	0.52	0.09
Wyoming	7,686	3.05	3.96	315	0.58	0.11
Total	90,605	35.91	37.88	14,620	27.09	22.84
Northeast	68,248	27.05	29.53	6,598	12.23	5.11
Midwest	47,183	18.70	21.66	4,485	8.31	3.35
Northeast and Midwest	115,431	45.75	51.19	11,083	20.54	8.46
South	46,299	18.35	10.92	28,267	52.38	68.70
West	90,605	35.91	37.88	14,620	27.09	22.84
West and South	136,904	54.25	48.81	42,887	79.46	91.54
U.S. Total	252,335	100.00	100.00	53,970	100.00	100.00

SOURCES: Northeast-Midwest staff calculations based on U.S. Department of Commerce, National Oceanic and Atmospheric Administration, *Monthly State, Regional and National Heating Degree Days Weighted by Population*, and *Monthly State, Regional and National Cooling Degree Days Weighted by Population* (Asheville, N.C.: National Climatic Data Center, March 1991).

Data: Lane Miles and Vehicle Miles Travelled

Producer Agency: U.S. Department of Transportation, Federal Highway Administration

Frequency of Update: annual

Examples of Federal Formulas that Use These or Similar Data

Program		Weight on this Factor	Fiscal 1990 Appropriation
Interstate Maintenance (formerly 4R program) --	lane miles	55%	$2.497 billion
	vehicle miles travelled	45%	

Comments from a Regional Perspective

Table 8 shows state shares of two proxies for the need for highway maintenance: lane miles and vehicle miles travelled. One measures road surface; the other measures usage. Not surprisingly, some states with large land area, particularly some western states, have a larger portion of the nation's highway miles than its highway use. Overall, the factor of vehicle miles travelled is more favorable for the Northeast-Midwest region than the factor of lane miles; for eight states within the region, however, lane miles is the better factor. When these data are used within the allocation formula for the interstate maintenance program, their effects are further clouded by minimum funding and hold harmless provisions. Thus, the regional picture is not clearcut.

When Congress reauthorized the highway program in 1991, lawmakers considered increasing the weight on the usage factor. In the end, they retained the factors and weights from the prior 4R program.

Table 8. Lane Miles and Vehicles Miles Travelled, 1990

State or Region	Lane Miles Percent of U.S. Total	Vehicle Miles Travelled Percent of U.S. Total
New England		
Connecticut	0.849	1.832
Maine	0.578	0.316
Massachusetts	1.061	1.763
New Hampshire	0.443	0.370
Rhode Island	0.212	0.393
Vermont	0.702	0.279
Total	3.845	4.953
Mid-Atlantic		
Delaware	0.079	0.122
Maryland	1.138	2.367
New Jersey	0.968	1.663
New York	3.395	3.685
Pennsylvania	2.596	2.485
Total	8.176	10.322
Midwest		
Illinois	3.682	3.373
Indiana	2.263	2.212
Iowa	1.776	1.089
Michigan	2.959	3.851
Minnesota	2.124	1.744
Ohio	3.362	4.859
Wisconsin	1.383	1.390
Total	17.549	18.518
South		
Alabama	2.039	1.813
Arkansas	1.195	0.950
District of Columbia	0.040	0.104
Florida	3.360	4.250
Georgia	3.138	4.161
Kentucky	1.743	1.808
Louisiana	1.699	1.764
Mississippi	1.517	0.886
North Carolina	1.880	1.954
Oklahoma	1.469	1.338
South Carolina	1.698	1.743
Tennessee	2.420	2.815
Texas	7.617	7.638
Virginia	2.567	3.315
West Virginia	0.968	0.670
Total	33.350	35.209

Table 8. Lane Miles and Vehicles Miles Travelled, 1990 (continued)

State or Region	Lane Miles Percent of U.S. Total	Vehicle Miles Travelled Percent of U.S. Total
West		
Alaska	1.263	0.260
Arizona	2.605	1.762
California	7.096	13.552
Colorado	2.152	1.598
Hawaii	0.136	0.314
Idaho	1.278	0.461
Kansas	1.866	1.006
Missouri	2.807	2.893
Montana	2.601	0.444
Nebraska	1.067	0.581
Nevada	1.212	0.536
New Mexico	2.194	1.023
North Dakota	1.252	0.248
Oregon	1.656	1.388
South Dakota	1.486	0.369
Utah	2.100	1.063
Washington	2.001	2.507
Wyoming	2.002	0.416
Total	36.774	30.421
Northeast	12.021	15.275
Midwest	17.549	18.518
Northeast and Midwest	29.570	33.793
South	33.350	35.209
West	36.774	30.421
South and West	70.124	65.630
U.S. Total[1]	99.694	99.423

[1]Totals do not equal 100 because of the omission of Puerto Rico.

SOURCE: Northeast-Midwest staff calculations based on U.S. Department of Transportation, Federal Highway Administration, data run, Washington, D.C., June 4, 1990.

Data: Urban and Rural Population

Producer Agency: U.S. Department of Commerce, Bureau of the Census

Frequency of Update: every ten years

Examples of Federal Formulas that Use These or Similar Data

Program	Weight on this Factor	Fiscal 1990 Appropriation
Agricultural Experiment Stations, Hatch Act -- rural population	26%	$148.3 million
Highway Planning & Construction Urban System -- urban population	100%	$713.1 million
Rural Seconday System -- rural population	33.3%	$573.1 million
Water and Waste Disposal Systems for Rural Communities -- rural population	partial	$208.0 million
Projects for Assistance in Transition from Homelessness -- urbanized population	100%	$27.8 million
Public Transportation in Nonurbanized Areas -- nonurbanized population	100%	$89.3 million

Comments from a Regional Perspective

Table 9 presents alternative kinds of population density data. In common parlance words such as *urban* and *urbanized* sound the same, as do the terms *rural* and *nonurbanized*. As used by the Census Bureau and employed in federal allocation formulas, however, the terms have distinct meanings. According to the 1980 census, the Northeast-Midwest region had a larger share of the urbanized than of the urban population and a larger share of the rural than of the nonurbanized population, although this pattern did not hold for all states in the region. Nonurbanized population was a particularly disadvantageous data set for the region as a whole, yet several states in the Midwest had substantial shares of this population. The different patterns in similarly named data underscore the importance of looking behind the words used in legislation to the actual numbers to which words refer.

Table 9. Urban, Rural, Urbanized and Nonurbanized Populations, 1980 Census

State or Region	State Share of Urban Population (5,000+)	State Share of Rural Population (5,000-)	State Share of Urbanized Population (50,000+)	State Share of Nonurbanized Population (5-50,000)
New England				
Connecticut	1.486	1.033	1.643	0.442
Maine	0.277	0.998	0.177	0.945
Massachusetts	2.887	1.562	3.155	1.111
New Hampshire	0.277	0.699	0.208	0.731
Rhode Island	0.504	0.193	0.561	0.123
Vermont	0.097	0.525	0.054	0.377
Total	5.528	5.010	5.798	3.729
Mid-Atlantic				
Delaware	0.248	0.285	0.261	0.161
Maryland	2.037	1.352	2.230	0.759
New Jersey	3.977	1.357	4.466	0.734
New York	8.960	4.483	9.789	3.459
Pennsylvania	4.859	5.895	5.088	3.341
Total	20.081	13.372	21.833	8.454
Midwest				
Illinois	5.682	3.276	5.887	4.322
Indiana	2.058	3.186	1.846	3.462
Iowa	0.942	2.051	0.661	2.802
Michigan	3.904	4.337	4.104	2.580
Minnesota	1.566	2.274	1.458	2.281
Ohio	4.729	4.631	4.641	5.313
Wisconsin	1.743	2.779	1.659	2.307
Total	20.624	22.534	20.255	23.068
South				
Alabama	1.340	2.545	1.253	1.918
Arkansas	0.632	1.866	0.400	2.173
District of Columbia	0.394	0.000	0.453	0.000
Florida	4.940	2.571	5.273	2.730
Georgia	1.970	3.356	1.848	2.782
Kentucky	1.053	2.889	0.875	2.235
Louisiana	1.679	2.194	1.563	2.451
Mississippi	0.660	2.145	0.418	2.268
North Carolina	1.604	4.852	1.421	2.820
Oklahoma	1.152	1.712	0.899	2.831
South Carolina	0.951	2.336	0.844	1.659
Tennessee	1.619	2.909	1.481	2.532
Texas	6.688	5.009	6.479	8.072
Virginia	2.098	2.878	2.161	1.679
West Virginia	0.371	1.994	0.286	0.931
Total	27.151	39.256	25.653	37.081

Table 9. Urban, Rural, Urbanized and Nonurbanized Populations, 1980 Census (continued)

State or Region	State Share of Urban Population (5,000+)	State Share of Rural Population (5,000-)	State Share of Urbanized Population (50,000+)	State Share of Nonurbanized Population (5-50,000)
West				
Alaska	0.144	0.250	0.121	0.294
Arizona	1.337	0.813	1.358	1.199
California	13.111	3.566	14.034	6.993
Colorado	1.388	0.947	1.432	1.096
Hawaii	0.490	0.253	0.488	0.498
Idaho	0.269	0.751	0.134	1.167
Kansas	0.880	1.385	0.607	2.697
Missouri	1.938	2.625	1.860	2.457
Montana	0.226	0.622	0.148	0.743
Nebraska	0.570	0.955	0.450	1.365
Nevada	0.402	0.220	0.422	0.267
New Mexico	0.545	0.621	0.373	1.684
North Dakota	0.188	0.516	0.126	0.599
Oregon	1.030	1.425	0.900	1.889
South Dakota	0.168	0.618	0.098	0.632
Utah	0.728	0.415	0.745	0.615
Washington	1.794	1.810	1.861	1.350
Wyoming	0.168	0.291	0.084	0.731
Total	25.376	18.083	25.239	26.274
Northeast	25.609	18.382	27.632	12.183
Midwest	20.624	22.534	20.255	23.068
Northeast and Midwest	46.233	40.916	47.887	35.251
South	27.151	39.256	25.653	37.081
West	25.376	18.083	25.239	26.274
South and West	52.527	57.339	50.893	63.355
U.S. Total[1]	98.760	98.255	98.780	98.606

[1]Totals do not equal 100 because of the omission of Puerto Rico.

SOURCE: Northeast-Midwest staff calculations based on U.S. Department of Commerce, Bureau of the Census, *1980 Census of Population, General Social and Economic Characteristics, U.S. Summary* (Washington, D.C., 1981).

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